

**The Azores Bullfinch - *Pyrrhula murina* GODMAN, 1866**  
**The history of a bird species:**  
**persecuted - missing - rediscovered - protected (?)**  
**(including a list of all known specimens and syntypes)**

G. Aubrecht\*

**Abstract**

The Azores Bullfinch *Pyrrhula murina* GODMAN, 1866 is an endemic bird species unique to the eastern part of Sao Miguel, Azores, Portugal. Well known to residents until the beginning of the 20<sup>th</sup> century its distribution area seems to have shrunk drastically. Because of its rarity specimens of *P. murina* have been eagerly collected for museums and private collections. These collecting efforts are described as well as the fate of at least 92 specimens which are now distributed in museums in Europe and North America. Known syntypes are located at Natural History Museums in Tring (BMNH), Berlin (ZMB), Manchester, St. Petersburg (ZISP) and Vienna (NMW). About 50 percent of the known and still existing specimens had been collected by Rudolf von THANNER, an Austrian collector, in 1907. From 1932 onwards the Azores Bullfinch was thought to be near to extinction because of lacking scientific records. After its rediscovery in 1967 efforts for the conservation of *P. murina* and its degrading habitat started to grow continually. In the 1990s especially J. A. RAMOS studied the ecology of the Azores Bullfinch which led to a new understanding of its habitat and feeding requirements. This documentation is an attempt to summarise the whole history of the Azores Bullfinch within the frame of contemporary ornithology and museum collections.

**Key words:** *Pyrrhula murina*, Aves, Azores Bullfinch, Azores, history, museum collections

**Zusammenfassung**

Der endemische Azorengimpel *Pyrrhula murina* GODMAN, 1866 lebt nur im Ostteil der Azoreninsel Sao Miguel, Portugal. Bis zum Beginn des 20. Jahrhunderts war die Art der einheimischen Bevölkerung gut bekannt, danach schrumpfte das Verbreitungsareal drastisch. Wegen seiner Seltenheit wurde *P. murina* eifrig für Museen und Privatsammlungen gesammelt. Diese Sammelaktivitäten und der Verbleib von zumindest 92 derzeit bekannten Belegen in europäischen und nordamerikanischen Museen wird beschrieben. Nachweisbare Syntypen existieren in den Naturhistorischen Museen in Tring (BMNH), Berlin (ZMB), Manchester, St. Petersburg (ZISP) und Wien (NMW). Etwa 50 Prozent der bekannten und noch vorhandenen Belege stammen von einer 1907 durchgeführten Sammlungsreise des Österreicher Rudolf von THANNER. Aufgrund fehlender wissenschaftlicher Belege vermutete man seit 1932, dass der Azorengimpel nahe dem Aussterben sei. Nach der Wiederentdeckung 1967 begannen kontinuierliche Bemühungen um den Schutz dieser Vogelart und seines gefährdeten Lebensraumes. Besonders J.A. RAMOS studierte in den 1990er Jahren die Ökologie von *P. murina*, was zu einem neuen Verständnis der Habitat- und Nahrungsansprüche führte. Diese Dokumentation ist ein Versuch die gesamte Geschichte des Azorengimpels im Umfeld von zeitgenössischer Ornithologie und Museumssammlungen zusammenzufassen.

---

\* Dr. Gerhard AUBRECHT, OÖ. Landesmuseum/Biologiezentrum, J.W. Klein-Straße 73, A-4040 Linz, Austria.

1. Introduction .....	24
2. Chronological description of events including glances on persons and institutions involved .....	25
2.1. 1591 - the oldest source of literature .....	25
2.2. 19 <sup>th</sup> century - misinterpretations and scientific description .....	25
2.3. 1900-1907 - the big collecting expeditions .....	30
2.4. 1908-1931 - the last collecting efforts .....	39
2.5. 1932-1966 - uncertainty about the Azores Bullfinch's existence .....	42
2.6. 1967-1988 - rediscovery and calls for conservation .....	44
2.7. 1989-2000 - ecological studies and international conservation efforts .....	46
3. History of specimens known in museum collections including syntypes .....	47

## 1. Introduction

During a short stay on the Azores islands Sao Miguel, Faial and Pico in July 1995 I took the opportunity to have a look at the habitats of the Azores Bullfinch (local name Priôlo) around Furnas and Pico de Vara as described by BANNERMAN & BANNERMAN (1966) and GRIMMET & JONES (1989). It was a big surprise when we actually spotted these rare birds along the slopes of Pico de Vara. Excited by both the rarity of the Azores Bullfinch and its remote distribution on only one mountain range in the easternmost part of Sao Miguel I started to collect historical and recent information (AUBRECHT & RAMOS 1997). The information gathered comprises a chronological description of events concerning the "history" of *Pyrrhula murina* and a reconstruction of the fate of scientific specimens.

The Azores Bullfinch is one of the rarest bird species in Europe and except some sea-birds the one with the smallest area of distribution, living only in the eastern mountains of the island Sao Miguel, Azores (RAMOS 1997, 1999a,b). According to recent investigations it is threatened by habitat deterioration because invading exotic plant species (*Cryptomeria japonica*, *Hedychium gardnerianum* and *Clethra arborea*) are destroying the original laurel forests on Sao Miguel (RAMOS 1996a, 1999b). In view of this situation an action plan promoted by BirdLife International is under way to strengthen conservation measures for preserving the last laurel forests around Pico de Vara together with the Azores Bullfinch (MONTEIRO 2000, PEREIRA & al. 1998, RAMOS 1995b). A leaflet in Portuguese language summarising these conservation measures has been published recently (RAMOS 1995c). The project is carried by Direcção Regional dos Recursos Florestais in co-operation with Departamento de Biologia da Universidade dos Açores and co-financed by the Life Programme of the European Community (RAMOS 1996c).

Described as a species by GODMAN (1866), the Azores Bullfinch was considered a subspecies since HARTERT & OGILVIE-GRANT (1905). But in 1989 the separation of *Pyrrhula pyrrhula* and *Pyrrhula murina* as distinct species was discussed again (KNOX 1989) and the case for their separation is strengthened by studies of morphological features (CLEMENT 1993, CRAMP & PERRINS 1994) and new genetical studies (RAMOS, pers. comm.). HAZEVOET (1996) discusses problems arising from taxonomical status of endemic birds and conservation matters. Concerning the Azores Bullfinch he writes:

... Again, however, there can be little doubt that *murina* represents a unique and independent evolutionary lineage, which developed its distinguished characters in situ. "Despite a cautious and conservative" position on taxonomic matters (HAGEMEIJER & BLAIR 1997) *Pyrrhula murina* is given species status in the new standard work "The EBCC Atlas of European Breeding Birds". ...

The most comprehensive surveys about the history of *Pyrrhula murina* are presented in BANNERMAN & BANNERMAN (1966) and RAMOS (1993). As I will point out it is worthwhile to look at the original sources and to discuss the events in the wider frame of the history of ornithology that links the Azores closely to European and American collections and museums. For a better readability the historical part is separated from the part describing the museum specimens.

### Abbreviations

AMNH:	American Museum of Natural History, New York (USA)
BMNH:	British Museum of Natural History (now the Natural History Museum NHM) Bird Group, Tring (UK)
MHNP:	Museum National d'Histoire Naturelle, Paris (F)
MNCNM:	Museu Nacional de Ciencias Naturales, Madrid (E)
MPUW:	Museum of Natural History and Institute for Zoology, Warsaw (PL)
NMW:	Naturhistorisches Museum Wien (A)
RMNH:	Rijksmuseum van Natuurlijke Historie – Naturalis, Leiden (NL)
ZFMK:	Zoologisches Forschungsinstitut und Museum A. Koenig, Bonn (D)
ZISP:	Zoological Institut, Russian Academy of Sciences, St. Petersburg (GUS)
ZMA:	Zoologisch Museum, University of Amsterdam (NL)
ZMB:	Zoologisches Museum der Humboldt Universität Berlin (D)
ZMMU:	Zoological Museum, State University, Moscow (GUS)

## 2. Chronological description of events including notes on persons and institutions involved

### 2.1. 1591 - the oldest literature reference

The Azores Bullfinch had already been mentioned by Gaspar FRUCTUOSO (1591, reprinted 1924 - 1931; \*1522 Ponta Delgada ?, † 1591 Ribeira Grande, Azores) who wrote the chronicles "Saudades da Terra" during the colonisation of the islands (15<sup>th</sup> to 16<sup>th</sup> century). He mentions the species only for the island Sao Miguel. This suggests that the bird should have been quite well known at the time of the discovery of this island (BANNERMAN & BANNERMAN 1966 and pers. comm. J.A. RAMOS, not mentioned in KNECHT & SCHEER 1972).

### 2.2. 19<sup>th</sup> century - misinterpretations and scientific description

The first indication of the local people's hostility to the Azores Bullfinch originates from the 19<sup>th</sup> century.

Agricultur 15.9.1843 (BANNERMAN & BANNERMAN 1966):

... All persons resident in the concelho who cultivate the vine, the woods and the orchards must pay for each alqueire (13 ares et 93 centiares) of the ground eight heads of injurious (nuisibles) birds, to wit: the blackbird, the canary, the chaffinch, the blackcap and the bullfinch (priôlo) ...

Listed as a pest species by fruit growers the Azores Bullfinch seems to have been well known and must have been a common visitor to cultivated land.

Scientific discussion of the Azores Bullfinch began when A. MORELET brought back one specimen from an expedition to the Azores (1857) to France (DROUET 1861 in LOWE & BANNERMAN 1930, MORELET 1860). MORELET's companion H. DROUET on that expedition found the Azores Bullfinch "abondant alors et très-destructeur".

Despite the obvious abundance mentioned by DROUET (1861), PUCHERAN (1859) who examined the specimen believed it to be *Pyrrhula coccinea* (now *Pyrrhula pyrrhula*) a migrant from Spain. Thus he missed the opportunity to describe the Azores Bullfinch scientifically and secure a valuable type specimen for France. BOLLE (1860) referred to PUCHERAN but tended to believe that the bullfinch collected by MORELET and DROUET might be resident.

The first British scientific ornithological expedition to the Azores was led by Frederic Du Cane GODMAN (\*1834, † 1919; from BANNERMAN & BANNERMAN 1966 and MEARNs & MEARNs 1988) (Fig. 1). Together with his brother Captain GODMAN and Mr. BREWER, a taxidermist, he stayed and collected on Sao Miguel from March 21<sup>st</sup> until April 21<sup>st</sup> 1865. In his description of the species *Pyrrhula murina* (Fig. 2) he mentions at least the local abundance of this bird.

GODMAN (1866):

*Pyrrhula murina*, sp. nov. Prior. (Plate III.)

Major; subtus murinus, uropygio cinereo, rostro pedibusque validissimis.

(Male): Capite toto ad nucham et mento, alis caudaque nigris, purpurascens tinctis, his nitentioribus; dorso et corpore toto subtus murinis, illo obscuriore, ventre medio vix aurantiaco tincto, tectricibus minoribus et fascia alari cum uropygio cinereis, hoc paulo dilutiore; macula alari ferruginea ut in aliis hujus generis specibus.

(Female): Mari omnino similis, sed pectore magis cinereo, et colore aurantiaco carente.

Long. Tot. 6.5, alae 3.4, caudae 3, tarsi .8, dig. Med. .9, ung. .25, poll. Angl.

Hab. Ins. Scti. Michaelis, Azorensi.

Synon. *Pyrrhula coccinea*, PUCHERAN, 'l'Institut,' No. 1310, Feb. 9, 1859; Rev. Zool. 1859, p. 413 (minime DE SÉLYS-LONGCHAMPS, Faun. Belg. p. 79, nec auctt. Caett.).

M. MORELET brought away but one specimen of this bird from the Azores, and M. PUCHERAN refers it to *P. coccinea* of DE SÉLYS-LONGCHAMPS (Cf. 'Ibis,' 1859, p. 322; 1860, p. 93; et 1861, p. 401), the female of which it somewhat resembles; but it is entirely different in appearance from the male to that species, not having the red breast or white rump, which last character is also shared by the female. It is therefore necessary to confer on the present bird a new name, and I have chosen one which is, I trust, sufficiently expressive, as the accompanying figure will show.

In habits the Bullfinch of the Azores resembles our *P. vulgaris*, feeding principally upon insects and the buds of trees. I believe that it is confined to the mountainous parts of St. Michael's, where it is tolerably abundant. It is so tame that it takes little notice of the report of a gun, and I shot thirteen individuals in the same poplar tree in a few minutes. I know nothing of its breeding-habits, as I was not in the island at the right time of year, and it is difficult to obtain accurate information from the inhabitants.

The number of specimens of the Azores Bullfinch GODMAN had collected is not clear because in his species description he only refers to 13 specimens he had shot at once. J. V. BOCAGE (1868), professor in Lisbon, accused GODMAN of having ascertained the sex of his specimens wrongly. In his "Natural History of the Azores" GODMAN (1870) strongly



Fig. 1: Frederic Du Cane GODMAN (1834-1919), British ornithologist, who collected on Sao Miguel, Azores, in 1865 and described *Pyrrhula murina* scientifically as a new species. – Ibis 1908, Tab. Suppl., opp. p. 81.



Fig. 2: Azores Bullfinch *Pyrrhula murina*. Plate from GODMAN's scientific species description (GODMAN 1866, plate III). The printing of this figure was sponsored by travel agency TUI, Linz.

reproved BOCAGE for his "preconceived opinion". Later GODMAN (1870) reported that he had received 19 additional specimens of the Azores Bullfinch since his return to England (LOWE & BANNERMAN 1930). GODMAN's collection later became known as Coll. O. SALVIN & F.D. GODMAN.

According to the species description by GODMAN (1866) and the following references by GRAY (1870), GODMAN (1870) and DRESSER (1876) all specimens collected by GODMAN were available for the species description and therefore have to be recognized as syntypes (Fig. 3, 4). No lectotype has been designated (WARREN & al. 1971, KNOX & WALTERS 1994).

1997 6 syntypi are stored at BMNH (pers. comm. R. PRÛS-JONES), 2 syntypi of GODMAN's collection from 1865 are held at NMW (pers. comm. E. BAUERNEFELD, Fig. 3), 2 at ZMB (pers. comm. B. STEPHAN), 2 at the University Museum Manchester (pers. comm. M.V. HOUNSOME) and 1 at ZISP in St. Petersburg (pers. comm. V. LOSKOT). All these specimens lack information on the detailed name of collection locality.

During the year 1886 H. SIMROTH (1888) spent 2 months on the Azores with an expedition of the Prussian Academy of Sciences investigating the whole fauna of the islands. Concerning the Azores Bullfinch he only refers to museum specimens from the museum at Ponta Delgada, Sao Miguel, Azores. In his general description of birds he cites BOLLE (1860), CORDEYRO (1717) and Arruda TURTADO (1884: *Materiaes para o estudo anthropologico dos povos acorianos. Ponta Delgada*). Prof. Dr. Heinrich SIMROTH (\* May 10<sup>th</sup> 1851 in Riestedt near Sangerhausen, Germany, † August 31<sup>st</sup> 1917 in Gautzsch near Leipzig, Germany) was a German zoologist, a specialist in the biology and systematics of molluscs (EHRMANN 1918).

SIMROTH (1888):

6. *Pyrrhula murina* GODMAN.

I. S. 115 und II. S. 84 (*Pyrrhula coccinea*). III. S. 28. Azorenmuseum.

Die Thatsache, dass das Männchen des Azorengimpels die auszeichnenden secundären Geschlechtscharaktere, die Schmuckfarben, nicht oder doch längst nicht in dem Masse besitzt, als unser gemeiner Dompfaff, ist so auffällig, dass die Beschreibung zuerst Barboza du Bocage's Zweifel an der richtigen Bestimmung des Geschlechts erwecken musste (s. III.). Der Zweifel hat sich nach den ausführlichen Untersuchungen Godman's als unberechtigt herausgestellt. Nach ihm lebt der Vogel nur auf dem gebirgigen Theile von Sao Miguel, nach Morelet nur auf dem östlichen Theile, und das letztere bestätigen meine Erkundigungen. Godman nimmt an, dass er auf der Insel nistet, wiewohl er über den Nestbau nichts erfahren konnte. Morelet glaubt, dass er nur zu bestimmter Jahreszeit, dann aber regelmässig die Insel besuche. Die Annahme wird kaum durch eine Parallele gestützt und hat wohl nichts für sich. Denn wie soll ein Vogel, der bei uns vom Oktober bis März umherstreift, die übrige Zeit Standvogel ist, im April zur ersten und im Mai zur zweiten Brut schreitet, zur Zeit der Maisernte, wo er in Furnas so häufig schädlich wird, über das Meer fliegen? Wenn die grössere Varietät *P. coccinea* auf dem Festlande von Zeit zu Zeit auftritt, so ist das immerhin ein ganz anderes Verhalten. Die besondere Zeichnung macht den Azorenvogel zu einer Insel-species, ausschlaggebend ist aber wohl Godman's Versicherung, dass er neun Vögel "just prior to the breeding-season" auf ihre Genitalien untersucht habe. Gerade bei Strichvögeln, als welche die Gimpel doch gelten, ist nur an passive Wanderung durch Stürme zu denken und zwar daran, dass das Verschlagen selten genug vorkommt. Hierin aber wird der Hauptgrund für die Ausbildung einer besonderen Art oder Race zu suchen sein, da das alte Blut nur selten durch neuen Zuzug wieder aufgefrischt wird. Man könnte noch dazu neigen, lange Zeiträume für die Umbildung in Anspruch zu nehmen oder gar an die Einwanderung zu einer Periode zu denken, als die Geschlechtsdifferenzierung bei unserem gemeinen Gimpel noch nicht die gegenwärtige Stärke erreicht hatten. Die Geologie, die darauf hinweist, dass Sao Miguel mit seinen beiden Endgebirgen und dem niedrigen Landrücken dazwischen ursprünglich aus zwei Inseln bestand, von denen die östliche die ältere war, würde eine derartige Speculation unterstützen.

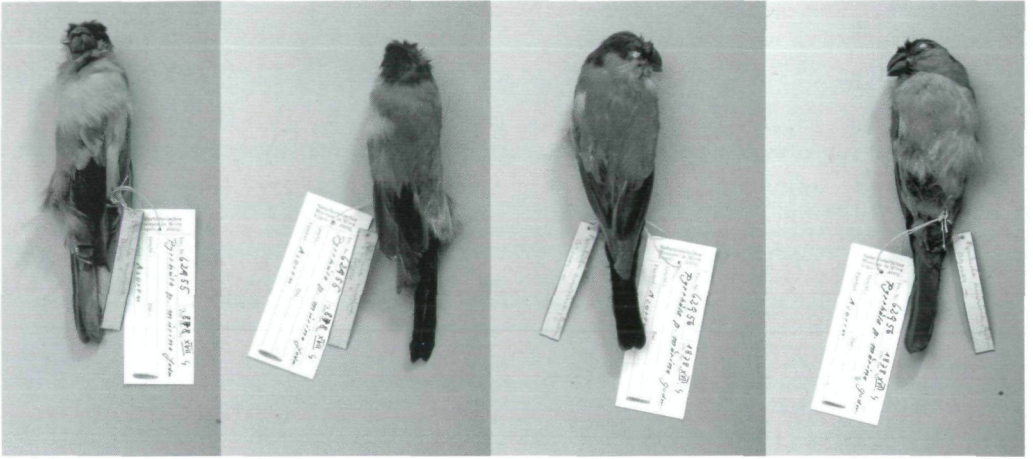


Fig. 3: Syntypes of *Pyrrhula murina*, collected by GODMAN 1865, NMW 62.955 and NMW 62.956. – Bird Collection NMW, with permission from E. BAUERNEFIND (Photo: A. Schumacher).

### 2.3. 1900 - 1907 - the big collecting expeditions

JOURDAIN (1910) gave a description of two eggs which he supposed to be of *Pyrrhula murina*. They were said to have been taken by Mr. OCHS in June 1900. CHAVIGNY & MAYAUD (1932) wrote about these eggs:

... We might say they are unknown if the Rev. F.C.R. JOURDAIN did not possess two eggs in his collection: the information in JOURDAIN's own possession was that there was not enough information about them to prove their authenticity, the supposed collector of the eggs in question, Herr OCHS, being already dead. (Translated by BANNERMAN & BANNERMAN 1966) ...

But these eggs are still mentioned by CRAMP & PERRINS (1994) who refer to SCHÖNWETTER (1984). SCHÖNWETTER lists 3 eggs of the Azores Bullfinch: the two questionable eggs mentioned by JOURDAIN and one egg of his own collection.

An oologist, Mr. Heinrich (Otto ?) OCHS (\*1843, †1908), is mentioned by GEBHARDT (1964) and GEBHARDT & SUNKEL (1954). It seems very unlikely that OCHS had been on the Azores himself.

The egg of the SCHÖNWETTER-Collection is listed with the locality "from Tereira". If the island Terceira is meant something again seems to be wrong, because the Azores Bullfinch is only known to live on the island Sao Miguel. The SCHÖNWETTER collection is kept in the Institut für Zoologie at Halle/Saale, Germany.

One must conclude that all three eggs are of dubious origin.

A specimen held at MHNP (Nr. 1901-968) shows that Azores Bullfinches were still collected by Azorean authorities at the turn of the century and sent to European Museums. This specimen was donated by M. le Capitaine CHAVAS (CHAVES), then director of the Museum at Ponta Delgada (pers. comm. J.F. VOISIN, MHNP).

The next expedition in the year 1903 led by W.R. OGILVIE-GRANT (\*1863, †1924, ornithologist at the BMNH; BANNERMAN & BANNERMAN 1966 and MEARN & MEARN 1988)



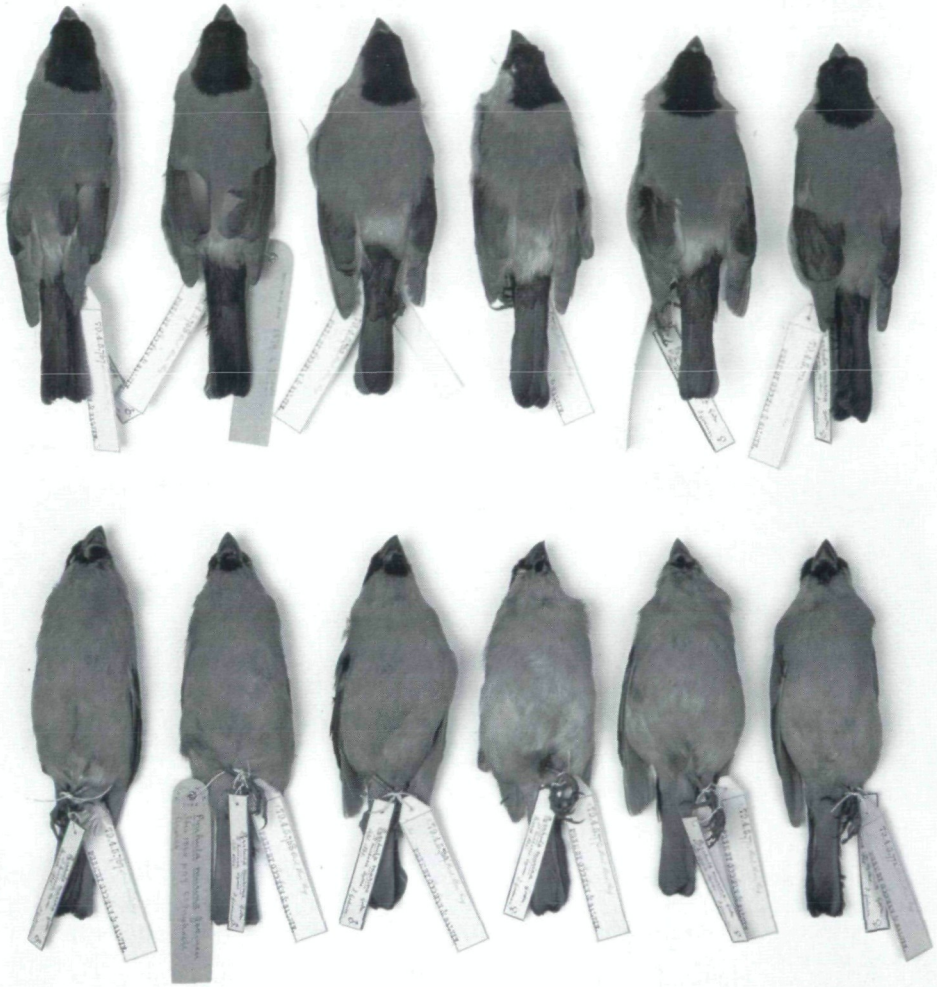


Fig. 4: Syntypes of *Pyrrhula murina*, collected by GODMAN 1865, NHM, Tring, in numerical order, BMNH No. 1879.4.5.767 - No. 1879.4.5.772. – Bird Collection NHM, Tring, with permission from R. PRŮS-JONES.

had only ornithological interests. All expenses were covered by W. ROTHSCHILD. The Trustees of the BMNH granted OGILVIE-GRANT three months' special leave of absence on the understanding that half the collections made should be the property of the BMNH. OGILVIE-GRANT stayed on Sao Miguel from March 4<sup>th</sup> until March 25<sup>th</sup> 1903 and obtained 12 specimens of the Azores Bullfinch near Furnas. F.A. de CHAVES, then director of the museum in Ponta Delgada, contributed a lot to the expedition's success. Francisco Alfonso de CHAVES (\*1857 Lisbon, Portugal, †1926 Ponta Delgada, Azores) was Director of the Museum at Ponta Delgada and Director of the Meteorological Observatory (BANNERMAN & BANNERMAN, 1966).

All specimens collected were also investigated by E. HARTERT (Curator of the ROTHSCHILD Museum in Tring) and the report about this expedition laid the foundation of the avifauna of the Azores (HARTERT & OGILVIE-GRANT 1905).

HARTERT & OGILVIE-GRANT (1905):

114. *Pyrrhula pyrrhula murina* GODM.

*Pyrrhula murina* GODMAN, Ibis 1866, p. 97, pl. Vii (San Miguel).

10 M(male) F(female) skins, 2 MF in spirits, near Furnas, San Miguel, 17,25. Iii., and April 1903. "Iris brown, bill black; legs brown, or very dark horn-brown."

Local name: Priôlo.

Specimens in the Ponta Delgada Museum:

a,b ad. Furnas, San Miguel.

This Bullfinch, by far the most interesting bird met with in the Azores, though plentiful enough when first discovered by Mr. Godman, is now very scarce, and its extermination is probably only a matter of a few years. Its range was apparently always a very restricted one, being limited to the eastern portion of San Miguel, where it frequents certain wooded banks to the north of Furnas and about Pavoacao. Major Chaves informed us that formerly he had sent many skins of the bird to the various museums in Europe, but that of late years he had been unable to procure any more specimens, and he feared that we were hardly likely to be successful in our quest.

During our visit to Furnas we therefore worked very hard to obtain specimens and procured the assistance of a local gunner to show us the ground where the Bullfinch was known to occur. Our first day with him resulted in nothing; late in the afternoon of the following day, after again traversing all the steep bars covered with tall pine trees and faya, Mr. Harwood and I heard a note, which could only be that of the bird we were looking for. An imitation of the call was at once returned, and in a few seconds a pair settled in a pine tree over our head and were bagged without any difficulty. In the flesh the male looked considerably larger than the female; the latter had the ovary well developed, and would probably have begun to lay in a few days. We subsequently, with the help of local aid, procured a small series of skins, but our efforts to find a nest were not successful. Curiously enough, the eggs appear to be unknown, and Major Chaves has never been able to procure a set for the Ponta Delgada Museum.

According to local information this Bullfinch is always met with in pairs, and our limited experience indicates that this statement is correct. Though once very common, its raids on the flowers of the peach trees have caused its wholesale slaughter by the natives. Senhor Jeronymo, of the Hotel in Furnas, told us that he could remember the time when it was no uncommon sight to see twenty or more of these birds at one time on a peach tree; and he said that the local gunners, who all know the "Priôlo" well, attribute their rapid disappearance to some disease, which killed them off, rather than to the shooting of them. However this may be, the fact remains that this very local bird must soon disappear, and, as there seemed no chance of saving them from the fruit-farmer, we felt no compunction in securing such specimens as we met with.

BANNERMAN & BANNERMAN (1966) mention an interesting letter written by Jose Maria Raposo de AMARAL, who was in his youth a great "chasseur" and who took a lively interest in the birds which he encountered. The existence of this letter is hidden in the chapter "Notable Portuguese Personalities in Azores Ornithology":

... In another letter to the mother country, he answers an enquiry concerning the priôlo - The Azores bullfinch - and gives a list of all the places where that bird could be found. His letter is dated 18<sup>th</sup> April 1906, at which time the priôlo must have been very abundant, and though restricted to the eastern end of Sao Miguel, fairly widespread. ...

This information is not at all in accordance with the situation described by HARTERT & OGILVIE-GRANT (1905), who supposed the Azores Bullfinch to be very rare and near to extinction.

The next ornithological expedition in the year 1907 by the Austrian professional collector Rudolf von THANNER is discussed especially by publications of LOWE (1908) and LOWE & BANNERMAN (1930). THANNER collected for Alexander KOENIG (Bonn) only on Sao Miguel. The Azores Bullfinch being his main interest he published a short note (THANNER 1908) in the Austrian journal "Ornithologisches Jahrbuch" edited by his father V. von TSCHUSI ZU SCHMIDHOFFEN.

Because little is known about him biographically we looked hard for further information (Anonymus 1922, BANNERMAN 1923, GEBHARDT 1964, pers. comm. H. SCHIFTER, NMW and G. D. CASTRO, Tenerife):

Rudolf von THANNER (\*21.2.1872, Salzburg/Austria, †22.5.1922, Adnet near Hallein/Austria) (Fig. 5) was the son of Victor von TSCHUSI ZU SCHMIDHOFFEN who was a well-known ornithologist with a famous bird collection (now mostly at NMW) during the last decades of the Austrian monarchy. As Rudolf von TSCHUSI he started a military career in Austria. In 1902 he abruptly changed his name and started to live at Vilaflor on Tenerife. There he became an expert on the ornithology of the Canaries. He was an eager collector and excellent taxidermist and sold most specimens to the Museum A. KOENIG (Bonn) and the ROTHSCHILD Museum in Tring as well as to other public and private museums in Europe. After the first World War in 1919 he returned to Austria and died there in 1922.

But relatives of THANNER are still living in Santa Cruz de Tenerife in 1997, D. Eugenio Machado von TSCHUSI.

Because THANNER collected for A. KOENIG letters still exist of his as well as of his father's correspondence with A. KOENIG. These documents and the list of specimens of the Azores Bullfinch held at the Museum A. KOENIG in Bonn have been made available to me by Dr. Renate van den ELZEN (Museum A. KOENIG, Bonn). The letters give insight into the life of R. von THANNER (TSCHUSI) and describe the whole expedition on the Azores in detail (the letter from TSCHUSI and all letters from THANNER belong to the archive Museum A. KOENIG, Bonn):

Letter from V. von TSCHUSI to A. KOENIG dating Sept. 24<sup>th</sup>, 1905:

... Nicht genug davon, traf mich 1900 ein ganz entsetzlicher Schlag. Mein ältester Sohn Rudolf, ein prächtiger, allbeliebter Offizier (Oberlieut.), verlobte sich, nicht mit meiner Billigung mit einer Russin. Kurz vor der Hochzeit ließ er sich in den nicht Aktivstand (ohne mein Wissen) versetzen und den 2. Mai 1900 erhielt ich von ihm die Nachricht, daß er infolge der sich ergebenden Schwierigkeiten (die ich nicht kenne) nach Amerika (?) ausgewandert sei. Sie können sich denken, was das für ein Schlag für uns war.

Nicht genug das, er wird jetzt als Militärflüchtling betrachtet, obgleich er alle vorgeschriebenen Formalitäten genau erfüllt, nur sich nicht abgemeldet hatte. Seit dieser Zeit ist er für uns ganz verschollen. Welcher Art die Schwierigkeiten waren, das weiß wohl nur er und die Eltern seiner Braut (Villa Tannenhof, Hallein) ...

In his first letter (THANNER, Vilaflor/Tenerife to KOENIG, Bonn) dating Dec. 1<sup>st</sup>, 1906 THANNER agrees to plan an expedition to Sao Miguel in order to collect birds for A. KOENIG. He refers as well to the publication of HARTERT & OGILVIE-GRANT (1905) and therefore seems to be informed about the latest situation of the Azores avifauna.

In his second letter (THANNER, Vilaflor/Tenerife to KOENIG, Bonn) dated Jan. 1<sup>st</sup>, 1906 he promises to collect Azores Bullfinches only for A. KOENIG.

... Ich bat Sie in demselben um Angabe Ihrer Bedingungen bezüglich der Azorenreise zu der ich mich dort bereit erklärte und Ihnen die Gimpel allein abzugeben versprach. Falls Sie noch die Absicht haben mich dorthin zu schicken bitte um sofortige Nachricht. ...

In his third letter (THANNER, Vilaflor/Tenerife to KOENIG, Bonn) dated Febr. 14<sup>th</sup>, 1907, he reports about his plan to visit the Azores during March. Then he describes his collecting methods in detail.

... Die Eier des Gimpels scheinen jedenfalls sehr schwierig zu bekommen zu sein und würde es mir eine ganz spezielle Freude sein selbe ausfindig zu machen. Bezüglich Einsichtnahme durch andere Personen in mein gesammeltes Material habe ich meine eigene Methode. Ich gehe wenn irgend möglich nie in ein Wirtshaus in Wohnung, nie in den Ort, sondern wo möglich irgenwo draußen in ein abgelegenes Gehöft was auch für Erlangung meiner Lebensmittel am einfachsten ist. Außerdem praepariere ich sehr schnell und sobald die Sachen irgend Form haben d.h. trocken sind verschwinden sie in meine halbleeren Koffer mit denen ich ankam. So reise ich .... gewöhnlich mit derselben Gepäcksnummer ab mit der ich ankam. Höchstens für die größeren Sachen lasse ich mir eine "schöne" Kiste machen. Ich werde übrigens dem Major Chaves ein Paar canarische Sachen für das Museum zum Geschenk machen. ...

In his fourth letter (THANNER, Vilaflor/Tenerife to KOENIG, Bonn) dated March 9<sup>th</sup>, 1907 he hopes that the British expedition has left some Azores Bullfinches to be collected. Only HARTERT has been told about this expedition who seems to have introduced THANNER to KOENIG.

... Ich hoffe dann dort Ihren Wünschen so weit es in meiner Macht steht gerecht werden zu können und hoffe, daß die beiden Engländer, die vor ein Paar Jahren dort waren nicht die letzten 12 Gimpel wegnahmen! Ich habe keinem weiteren Ornithologen von meiner Reise etwas mitgeteilt außer Herrn Hartert (heute). Ich erkundigte mich beim ihm ob er etwas von den Azoren wünsche - außer *Pyrrhula* für welch letztere ich jedoch bereits versprochen bin. Ich mußte ihm die Mitteilung machen, da ich ja gerade seiner Güte auch zum Großteile Ihr geschätztes Vertrauen verdanke. Von meiner Ankunft auf den Azoren werde ich Sie verständigen. Meine Adresse nach dort ist: St. Miguel - Ponta Delgada - Azoren - post restante. ...

In his fifth letter (THANNER, Ponta Delgada/Azores to KOENIG, Bonn) dated March 25<sup>th</sup>, 1907 he reports about having arrived at Sao Miguel. He has met Major CHAVES and visited the Museum in Ponta Delgada. CHAVES told him that he had quite a number of specimens of the Azores Bullfinches available but in fact did not show them. THANNER did not believe this story.

... Major Chaves, den ich gleich aufsuchte versprach mir für morgen mittags (heute ist Feiertag) die Besorgung der Erlaubnisscheine. Mit diesen bekomme ich dann auch die Gewehre heraus und kann dann übermorgen den 27. von hier zur Arbeit abgehen.

Ich wäre Ihnen sehr dankbar wenn Sie mir zu dem von Ihnen so gütig vorgestrecktem Reise- und Aufenthaltsgeld noch 200 Mark senden wollten.... Die gesammelten Bälge werde ich Ihnen alle, mit Ausnahme einer weniger für mich und vielleicht für Herrn Hartert ein paar Stücke, senden. Die Gimpel bleiben natürlich für Sie und ein paar für mich. ...Heute zeigte mir Chaves das Museum. Die Vogelwelt erscheint recht schlecht praepariert. Von den Gimpeln sagte mir Chaves er hätte einen großen Vorrat, denn er zahle den Landleuten für jedes Stück 1000 reis. Da mir die Sache etwas verdächtig schien frug ich ihn ob ich nicht ein paar junge Vögel sehen könnte, da in der Sammlung nur ein altes Paar steht. Er erwiderte mir auf meiner Rückkehr wolle er mir dann dieselben zeigen - da selbe jetzt verpackt und nicht geordnet seien! ...



Fig. 5: Rudolf von THANNER (1872-1922), Austrian collector and ornithologist who collected the largest series of *Pyrrhula murina* for the Museum A. KOENIG on Sao Miguel in 1907. – Photo with courtesy of D. Eugenio MACHADO von TSCHUSI, Tenerife, Spain.



Fig. 6: *Pyrrhula murina*, specimen collected by Rudolf von THANNER; male, April 1907, Povoacao, Sao Miguel, Azores, NMW 74.498. – Bird Collection NMW, with permission from E. BAUERNFEIND (Photo: A. Schumacher).

In his sixth letter (THANNER, Furnas/Azores to KOENIG, Bonn) dated April 4<sup>th</sup>, 1907 he reports about travelling on Sao Miguel and about his experiences with collecting and earthquakes. He has already found and collected Azores Bullfinches, supposedly near Furnas.

... Die Reise von dort nach hier (45 km) machte ich in einem Automobil, welches zwischen diesen beiden Punkten verkehrt, wenn genügend Mitfahrende sind. Die Fahrt, beziehungsweise die Gegend, müßte sehr genußreich sein, wenn der Lenker des Fahrzeuges etwas Übung hätte und nicht so rasen würde. Zweimal entkamen wir knapp dem Zusammenstoße mit einem Esel und einem Hausvorsprunge. Ich benütze die Gelegenheit eines Regentages um Ihnen einen kleinen Bericht zu machen. Ich habe eine Serie *Motacilla*, *Fringilla*, *Serinus*, einige *Merula*, *Sturnus*, einige *Erithacus*, *Sylvia atric.* mehrere *Regulus* und 2 ganze Gimpeln praepariert. Das Wetter war bis jetzt sehr ungünstig - regnerisch und windig. Außerdem hatte ich das sehr zweifelhafte Vergnügen in dieser kurzen Zeit 8 Erdbeben mitzumachen, davon 4 Stück am 29. März. Am selben Tage stürzten in Villafranca, dem nächstgrößten Orte nach Ponta Delgada und zwischen Furnas und letzterem Orte gelegen, 2 Häuser ein. ... Ich war dreimal auf *Pyrrhula*. Das erstemal hörte ich den ganzen Tag 3 und konnte trotz eines ortskundigen Führers (ich machte jedesmal Gänge nach verschiedenen Richtungen und nahm mir einen Mann, um mich über die Wege zu unterrichten) nur einmal an einen herankommen.

Es war ein schönes Weibchen. Die anderen beiden hörte ich zwar einigemal konnte aber durch das Gestrüpe (hohe Pinien, Fayas, Eukalyptus, Juniperus und diese alle mit Brombeeren verwachsen) absolut nicht durchkommen. Das Weibchen, das ich schoß verzehrte gerade Pinienblüten und fiel glücklicherweise an einer offenen Stelle zu Boden. Der Ruf des Vogels ist dem des Europäers ganz gleich nur bedeutend leiser und nach den wenigen Beobachtungen, die ich bis jetzt machte, gibt einem der Vogel auch nicht gerne Antwort und wenn schon nur 3 oder 4mal zusammen um dann für lange Zeit auszusetzen. Am nächsten Tage schoß ich 1 Männchen an einem anderen Platze und bekam auch nicht mehr zu sehen und zu hören. Gestern bekam ich gar keinen - es war sehr windig. Die Gegend, die Vegetation ist einzig schön. Die Wege vorzüglich! ... Von einem Brüten der Vögel hier ist noch gar keine Idee. Auch die Gimpeln traf ich alle nur einzeln an nicht wie Grant sagt paarweise. Die Eierstöcke sind in vollkommen winterlichen Zustände. ...

In his seventh letter (THANNER, Furnas, Azores to KOENIG, Bonn) dated April 29<sup>th</sup>, 1907 he reports about the difficulties of collecting Azores Bullfinches, about his support by CHAVES and a trip to Nordeste.

... Ich habe schon eine ganze Menge praepariert und hoffe auch eine schöne Gimpelserie zu bekommen. Ich hätte doppelt so viel gesammelt wenn nicht das Auffinden der *Pyrrhula* mit so viel Zeitverlust verbunden wäre. Ich muß viel bei Kerzenlicht arbeiten, da der Tag nicht ausreicht.

Ich machte eine zweitägige Excursion nach Nordeste, das mir Major Chaves anriet und speciell deswegen weil mir versichert wurde der fabelhafte Specht käme dort vor. Ich hatte die Absicht dort zu bleiben. Da dort aber wie ich sah nur dasselbe zu finden ist und außerdem noch schwieriger anzutreffen ist, kehrte ich wieder hierher zurück. Ganz hoch oben im verkrüppelten Lorbeer- und Erikabestande schoß ich 2 Gimpeln, jedenfalls die beiden höchstlebenden. ...

In his eighth letter (THANNER, Azores to KOENIG, Bonn) dated May 26<sup>th</sup>, 1907 he reports about having delivered the specimens.

In his ninth letter (THANNER, St. Cruz/Tenerife to KOENIG, Bonn) dated June 6<sup>th</sup>, 1907 he gives a list of specimens collected and sent to Bonn including 53 specimens of the Azores Bullfinch:

2 <i>Carduelis</i>	17 <i>Erithacus</i>	58 <i>Regulus</i>	13 <i>Sylvia atric.</i>
3 <i>Buteo</i>	77 <i>Fringilla</i>	3 <i>Scolopax</i>	27 <i>Turdus</i>
8 <i>Chloris</i>	59 <i>Motacilla</i>	37 <i>Serinus</i>	
12 <i>Coturnix</i>	<b>53 <i>Pyrrhula</i></b>	25 <i>Sturnus</i>	

25                      206                      123                      40                      Stück 394

His report also includes details about collecting different species and about the biology of the Azores Bullfinch.

... Ringeltauben sah ich im Ganzen nur 3 - schoß eine die mir in eine Schlucht fiel und die ich leider nicht finden konnte. *Carduelis* und *Chloris* lebt nur in der Nähe von Ponta Delgada und die letzten Tage, die ich auf diese beiden Arten verwenden wollte, waren so wie einige vorhergehende so miserabel, daß ein Hinausgehen unmöglich war. Ich schoß diese 11 an einem Tage und praeparierte sie am letzten, der auch schön war. Die Zettel von denselben legte ich bei. Ich konnte selbe nicht anbinden, da die Vögel nicht genügend fest waren und das Gefieder beim Verschieben ruiniert wird. Die Nummern der Zettel korrespondieren mit den Nummern auf der inneren Umhüllung. Nr 30 von *Fringilla* W ist auffallend klein. Nr 43 von *Pyrrhula* hat einige rote Federn. Ich verwendete jeden verfügbaren Tag auf diesen Vogel und ich glaube kaum, daß jemand diese Zahl je mehr zu Stande bringen wird. Von allen, die ich sah und hörte entkamen mir nur 4 Stück. Zwei fielen in Brombeerschluchten, einen fehlte ich und er gab mir an den folgenden Tagen Antwort, war aber vergrämt und nicht erreichbar und einer entkam mir am letzten guten Tage. Die Engländer

vor drei Jahren zahlten den Leuten 2 Dollar per Stück und konnten nur 12 bekommen. Das Bild, das als die Heimat des Vogels bezeichnet wird ist 5 Minuten hinter dem Landhause eines Engländers wo selbe wohnen und in der ganzen Umgegend ist kein Gimpel auffindbar. Hr. Major Chaves - der sich bestens empfehlen läßt - scheint im übrigen auch keinen Vorrat von diesen Vögeln zu haben, wie er mir bei meiner Ankunft sagte, denn er schickte mir den Besitzer einer englischen Yacht, die gerade vor dem Sturme nach Ponta Delgada geflüchtet war, auf den Hals. Sir Henry Johnston kam zu mir und sagte mir er wolle mir geben was ich wolle, wenn ich ihm die Gimpel abtrete. Ich sagte ihm ich könne leider keine abgeben, da selbe alle vergeben sind. Er wußte auch - jedenfalls von Chaves, daß die Bälge an Sie gehen und vielleicht erhalten Sie irgend eine Anfrage. Ich glaube sie sind alle schön ausgefallen. Einige werden weniger schön aussehen. Es war in den ersten Tagen und ich kam in strömenden Regen so daß ich und die Vögel vollkommen durchweicht waren. Außerdem fressen die Kerle gerade zu dieser Zeit die geschlossenen Knospen der Pappelblätter, sind ganz verschmiert und man bringt diese klebrige Geschichte absolut nicht heraus. Später verpackte ich sie in kleine Holzschachteln um sie von dem strömenden Regen zu schützen. Ich sandte Ihnen alles was ich schoß. Einen nahm ich um ihn den Kindern zu zeigen und ein Gimpelpaar bitte mir zu senden, da ich es als Erinnerung behalten möchte. Im Ganzen müssen Sie 394 Bälge erhalten haben. Finken und Gimpel brüten absolut noch nicht und dürfte dies erst nach Mitte Juni der Fall sein. ...

Despite the collecting strategy of OGILVIE-GRANT from the BMNH and an obvious relationship between HARTERT and THANNER, Percy LOWE (1908), the later keeper of the Bird Department of BMNH wrote a strong protest concerning the collecting of 53 Azores Bullfinches by R. THANNER for A. KOENIG.

LOWE (1908):

... to an atrocity which took place this spring in the Azores, in connexion with the very rare and almost extinct Bullfinch (*Pyrrhula murina*). In the space of eight weeks by diligent hunting fifty-three specimens of this interesting bird were shot by a professional collector and sent to Prof. Koenig (of Bonn), who employed him. I myself saw the particulars, measurements, sex, &c., of each one of these birds while I was at Sao Miguel, and can vouch for the accuracy of the figures, of which I made a note immediately.

I consider this lamentable and greedy slaughter an excellent example of the danger of a policy which advocates that when a bird is likely to become extinct, the best course to pursue is to shoot it down for preservation in museums. This may be a good policy if it is absolutely certain that the species is on the verge of extinction and cannot be saved. Mr. Ogilvie-Grant, for example, went to the Azores two or three years ago and had the greatest difficulty in procuring two or three specimens of the bird, even with the assistance of the peasants. It was, therefore, presumed to be practically extinct, and that the sooner the remaining examples were secured in the interests of science the better. But that they are or were by no means hopelessly doomed is proved by the fact that this collector of Dr. Koenig, who was engaged to make a collection of all the birds on the island, was able to procure 53 examples of this rare species. When one remembers the skulking habits, love of solitude, and the very inconspicuous colours of this bird, it is not too much to hope that there may still be left far more examples than are supposed to exist and enough to perpetuate their race for many years. It is very unlikely that the woods and fastnesses in the mountains at the east end of the island of Sao Miguel will ever be seriously interfered with, and if steps were taken to stop this mere hungry greed for the acquisition of a fine series of a rare bird not possessed by rival collectors, I believe its existence could still be assured. In a conversation I had with Major Chaves on the subject, he seemed to regard the preservation of birds as almost too hopeless a problem to contend with, owing to want of funds and organisation. That is far from being so it is unnecessary for me to point out. ...

The following collecting localities of *Pyrrhula murina* collected by THANNER 1907 (Museum A. KOENIG, Bonn) are listed:

Pico da Canario b. Furnas (3 males), Lagoa b. Furnas (3 males, 1 female), Povoacao (8 males, 2 females) (Fig. 6), Sierra da Trigo b. Furnas (2 males, 2 females), Arkada das Furnas (1 male), Pico da Passo b. Povoacao (1 male, 1 female), Estrada da Povoacao (1 male, 1 female), Vuelta Grande (1 male, 1 female), Furnas (12 males, 9 females).



Thanks to DEN HARTOG's (1983) paper on the priôlo a short article from THANNER (1908) came to light again. THANNER's notes are interesting because he mentions some details of the biology of the Azores Bullfinch and measurements of the birds collected.

THANNER (1908):

... The Azores Bullfinch is distributed in the NE of Sao Miguel up to the highest reaches of Pico da Vara. The birds prefer dense vegetation interrupted with clearings. In spring Priôlos can only be observed pair-wise, sometimes accompanied by a second male which always made a weak impression. The birds feed especially on the fresh seeds of poplar trees, later they prefer the blossoms of laurel trees. No bird was observed in orchards. ...

THANNER cannot explain what may have brought the Azores Bullfinch on the way to extinction. He mentions his observations of single birds which were strongly infested by mites.

Measurements listed by THANNER (1908):

Males:	strongest	total length	180 mm
		wing length	91 mm
	weakest	total length	161 mm
		wing length	79 mm
	mean	total length	170 mm
	mean	wing length	88 mm
Females:	strongest	total length	170 mm
		wing length	88 mm
	weakest	total length	163 mm
		wing length	84 mm
	mean	total length	165 mm
	mean	wing length	86 mm

THANNER had obviously left the Azores end of May/beginning of June 1907.

It is interesting to learn that LOWE (1908) had examined THANNER's collection on Sao Miguel. THANNER did not mention that at all. In the same manner LOWE (1908) did not mention that he himself had obtained 1 specimen while or shortly after seeing THANNER's collection on Sao Miguel.

But it is evident that during this period further specimens had been collected most probably by local Azoreans for European collections (pers. comm. C.S. ROSELAAR, ZMA, Amsterdam).

#### 2.4. 1908 - 1931 - the last collecting efforts

About the time between THANNER's expedition 1907 and CORREIA's collecting trip in 1927, RAMOS (1993) mentions a short note about the Azores Bullfinch in the year 1921:

... Seen and captured above Monte Simplicio in 1921 (BOTELHO, pers. comm.). ...

CHAVES (1923, reprinted 1947) wrote a monograph about the Azores bullfinch. He outlines the history of the Azores Bullfinch starting with G. FRUCTUOSO but does not refer to any recent observation. CHAVES is unclear but leaves the situation open:

... *Pyrrhula murina* has not been recorded in recent years but its extinction is not confirmed ... this bird merits protection so that it should not become extinct. ...

In 1914, 1923 and 1924 Adalbert ATHEN from Hamburg, Germany, travelled on Sao Miguel and reported about his ornithological observations (ATHEN 1925). He was not able to observe the Azores Bullfinch himself but obtained a collection of Azores birds which he donated to the Zoological Museum in Hamburg. Three specimens of *P. murina* were represented within this collection. It is not known when these birds had been collected. Most probably ATHEN was supported by CHAVES. An inquiry (1998) at the Zoological Museum in Hamburg was answered negatively. The specimens are thought to have been destroyed during the war (pers. comm. C. BRAUN, H. HOERSCHELMANN, Hamburg).

The next and last collecting expedition by Mr. J.G. CORREIA took place in 1927. This expedition is always reported to have been a private one (MURPHY & CHAPIN 1929).

Jose G. CORREIA was a native of Faial who emigrated to the United States. He made two collecting trips on the Azores. On his first trip he only collected on Faial and Pico 1921 - 1922 where he obtained "several hundred" specimens. During his second trip in 1927 - 1928 he collected on Faial, Terceira, Pico and Sao Miguel. CORREIA was a first-class collector, noted for the excellence of his taxidermy and for the notes which accompanied his specimens. His Azores collections have been documented by MURPHY (1923) and MURPHY & CHAPIN (1929) (BANNERMAN & BANNERMAN 1966).

MURPHY & CHAPIN (1929):

... Mr. Correia's trip to the Azores was purely personal ...

*Pyrrhula pyrrhula murina* GODMAN

*Pyrrhula murina* GODMAN, 1866, Ibis, p. 97, Pl. III (San Miguel, Azores).

Native name. - Priôlo.

San Miguel, November 11, 15, 18, 1927.

The Azorean bullfinch may be regarded as a "hen-feathered" race, the male being without any reddish coloration, thus resembling the female of the typical form, except that it is more brownish, and has a light gray instead of a white rump-spot. The wings of our four males measure 88-89,5 mm.; of one female, 86.

... When Correia landed at Ponta Delgada, San Miguel, in early November, he was assured that there was no chance of collecting bullfinches. The birds have been persistently shot because of their blossom-eating propensities in the orchards, and none had been reported for two years or more. While still supposed to exist, the bullfinches were said to be restricted to the dense forest of the uplands except during part of the spring season.

However, on November 8 he went to Furnas, twenty-seven miles distant from the port. The region lies in a small valley surrounded by steep hills, with a small lake and mineral springs of various flavours and temperatures. The commonest birds proved to be the blackbird, chaffinch, starling, robin, wagtail, blackcap, and kinglet, with a few wood pigeons in the taller growth of the slopes.

On the morning of November 10 the weather was clear, after rain during the whole night. Correia asked some of the inhabitants as to where he might find the priôlos, but their answers proved unsatisfactory. He was told that the birds were formerly seen in spring, but that during the winter they retired to the higher forests and were difficult to locate. He was at the point of losing hope when one man asked him what would be paid for each priôlo that he might discover for the collector. One dollar per bird was offered but the man demanded two, so Correia went off to try his luck alone. He wandered over the hills and through the woods, into orchards and gardens, seeing many birds, but not those sought, so he returned and hunted up the resident who had agreed to find the prize.

On November 11 he and his guide repaired to the forest along the lake known as Lagoa das Furnas. This is about 400 feet above the level of the valley; there is no flat land about it but only steep hillsides covered with large trees. At a point on the edge of the lake, where a charming little stone chapel stands, the guide began to call for priôlos by making short whistles every two seconds. Suddenly he announced the approach of a bird, which came presently within Correia's ken and answered each call. The victim hopped from tree to tree to within ten feet. Two more hours of patient calling was finally answered by another bird from a distance, and within four minutes this one also approached within collecting range.

The above episode took place partly during heavy showers of rain. Next day, November 12, Correia went to the same region and whistled for himself through equally heavy downpours, but without attracting any of the bullfinches into ambush.

On November 13 and 14 it rained hard all day. On the 15<sup>th</sup> he once more took his guide, who immediately called up a bullfinch at the usual place. The guide then said that as the priôlos usually travel in pairs he would have another within five minutes, which turned out according to prophecy. The final specimen was decoyed in the same manner on November 16. Four of the five are males.

Many of the people of Furnas stated that they had not seen a priôlo for ten years, and some of the younger folk, who knew the bird by reputation, asked to examine Correia's specimens ...

A.V. ANDORS (AMNH, New York) kindly sent 2 copies of letters concerning CORREIA's expedition on Sao Miguel.

People involved were the staff members of the AMNH in New York, F.M. CHAPMAN, R.C. MURPHY and J. CHAPIN as well as L.C. SANFORD, a trustee of the AMNH (MAYR 1997).

CORREIA to MURPHY (Nov. 15, 1927):

... But about the Priôlos (bullfinches) which are very rare here now and which Professor Vicente took two years or more to found one I am very glad to tell you that I got four (4) ready in one week, but I was lucky because I found one man who know way to find them and how to call them because the Priôlo is very hard to find them without calling. I hoping that the Museum may pay me a very good price for those Priôlos so to covering the expenses of this trip from Fayal here and back again which cost us nearly three thousand Escudos, the life at Furnas are very dear because there are tourist spot. I trying to bit (beat) Proffessor Vicente on Collecte Priôlos so I made a contract with a man who know to call the Priôlos if he can help me in get some Priôlos I will give him two American dollars for each one that he calling and I can get it, the man haven tried very hard over the forests every day with me so he as discover five ready but I have miss one. Beside the Priôlos I collecting few birds of every kind here too, the number of my collection now it is 736 birds all together. I will sent you the rest of the birds soon ...

MURPHY to L.C. SANFORD (Nov. 25, 1927):

... He [Correia] is now to start for San Miguel and Santa Maria where he hopes to obtain partridges, various European shore birds and the rare priôlo or Azorean bullfinch. He has a friend who lives in the crater of San Miguel - the type locality of the bullfinch, who tells him that a small number of these birds still inhabit the overgrown slopes above the orchards. I have no doubt that he will obtain specimens for us ...

Dr. Antonio da Silveira VICENTE (\* April 20<sup>th</sup>, † 1890 at Ponta Delgada) was in charge of the zoological collection of the museum in Ponta Delgada from 1930 until the appointment of José Maria Alvares CABRAL (from BANNERMAN & BANNERMAN 1966).

As after THANNER's collecting expedition in 1907, LOWE & BANNERMAN (1930) wrote a sharp note about CORREIA's "unnecessary collecting" of nearly extinct birds like the Azores Bullfinch.

MURPHY & CHAPIN (1930a, b) replied quickly:

... Directly or indirectly two great British natural history museums have been involved in killing many of the bullfinches of San Miguel ...

... It is not unlikely that the Bullfinch may still be saved if the government authorities of the Azores will legislate to protect it from its human enemies, both fruit-growers and collectors. Until such steps are under way, there is hardly ground for condemning ornithologists who would prefer to see the last examples of the species preserved in a museum of world-scope rather than rotting under a peach tree. ...

... one hundred and fifty specimens of the Azorian Bullfinch preserved in European collections; in America the grand total may be as many as eight! ... After receiving this indubitable testimony that the Bullfinch still exists in its fastnesses, we communicated with the Portuguese authorities, both at Lisbon and in the islands, evoking from them immediate and sympathetic responses. Thus, for example, a letter from Major J. Agostinho, Director of the Meteorological Service in the Azores, reports:

... I sent a translation of your letter concerning the protection of the Priôlo to the civil governor of San Miguel, and he at once gave orders to the local authorities and sent a recommendation to every curate and teacher in the villages that it is strictly forbidden to catch, keep in captivity, or destroy birds of said species, as well as to seise or annihilate their nests and eggs. I have personally made an appeal to the villagers in the local newspaper.

These outspoken exchanges must have been known to the ornithological community of this time because all participants were authorities in their various countries. As already pointed out, P. LOWE was head of the ornithological department at the BMNH. Robert Cushman MURPHY (\*1887, †1973) was at that time Chairman of the Department of Birds at the AMNH, New York (MEARNS & MEARNS 1992).

When these discussions ended one fact remained. The Azores Bullfinch collected by CORREIA on November 18<sup>th</sup> 1927 near lake Furnas was by all later authors thought to be the last one recorded by ornithological authorities for a long time.

But in fact one specimen was collected in 1931 by Padre Ernesto FERREIRA (\*1880, †1943), who was a well-known naturalist residing at Vila Franco. His collection with undocumented specimens especially from Sao Miguel came to the Museum in Ponta Delgada (BANNERMAN & BANNERMAN 1966).

De CHAVIGNY & MAYAUD (1932) did not visit the Azores themselves but relied on collections made by Manuel DIONISIO and A. PACHECO DE CASTRO in 1931. Their wish to get bird specimens from the Azores was supported by F.A. CHAVES and J. AGOSTINHO.

DE CHAVIGNY & MAYAUD (1932) cite one specimen of the Azores Bullfinch in their collections: Sexe ?, Furnas, San-Miguel, 11 mars 1931:

... Ce spécimen ... fut recueilli à Furnas, une des deux localités où se trouvent des Bouvreuils aux Acores, confisqué par M. l'abbé E. FERREIRA, de Villa-Franca, et envoyé en chair au Major AGOSTINHO ...

## 2.5. 1932 - 1966 - uncertainty about the Azores Bullfinch's existence

FERREIA (1933) reviews the study of DECHAVIGNY & MAYAUD (1932) but does not mention the Azores Bullfinch. The same must be said for MAYAUD's (1937) and SPOLTON & MAYAUD's (1947) publications.

Between 1934 and 1964 Colonel Jose AGOSTINHO published some small articles on Azores birds (1934, 1947, 1953, 1963, 1964). He was born on the Azores and in 1926 became appointed Director of the Meteorological Services of the Azores until his retirement in 1958. He travelled on all islands and was known as an all-round naturalist with a keen interest in bird protection (BANNERMAN & BANNERMAN 1966).

AGOSTINHO (1934, 1953) writing about the exploration of the Azores avifauna and about new records twice refers to the Azores Bullfinch. He is sure that the "Priôlo" is the most interesting bird of the Azores (AGOSTINHO 1934). In 1953 he believes that the "Priôlo" might be condemned to extinction because of the lack of conservation measures (AGOSTINHO 1953).

As pointed out by BANNERMAN & BANNERMAN (1966) who met him in the 1960s he was sure about the existence of the Azores Bullfinch. Did he hide information in order to protect the rare birds?

OSHIMA (1955) who travelled on Sao Miguel in 1935 did not mention the Priôlo.

A note which is added to CHAVES (1947) describes the bullfinch as "... quasi extinta ...".

MAYAUD (1947) does not mention *Pyrrhula murina*.

The uncertainty about the existence of the Azores bullfinch becomes clarified when RAMOS (1993) reports about his personal inquiries:

... Seen by foresters and workers during afforestation in the 1950s and 1960s in the hills above Nordeste (SALVADOR & others, pers. comm.).

The Xarifa expedition 1953 (SCHEER 1957, Furnas), ULFSTRAND 1957 (ULFSTRAND 1961), KNECHT 1958 (KNECHT 1961, 1967), the BENNEL expedition 1960 (BENNEL 1963, discussed in BANNERMAN & BANNERMAN 1966), CABRAL 1960-1963 (CABRAL 1964) and KNECHT and SCHEER 1964 (in BANNERMAN & BANNERMAN 1966 and KNECHT & SCHEER 1971) did not succeed in spotting even a single Azores Bullfinch. But the native people still assured them of the birds' existence.

KNECHT (1961):

... Die Einwohner der Ortschaft Nordeste (Mi) kennen den Gimpel aus eigener Anschauung. Nach ihren Aussagen kommt er im März-April, wenn die Obstbäume und der Lein blühen, in die Felder und Gärten der Kulturzone, während er sich in der übrigen Zeit in den Bergwäldern aufhält, wo er den "lauro" bevorzugen soll.

Stundenlang suchte ich ihn erfolglos in den Wäldern des Ribeira dos Moinhos, die man mir als Wohngebiet des seltenen Vogels genannt hatte. Immerhin ist der Azorengimpel hier noch vorhanden, wenn er auch zahlenmäßig abgenommen haben mag. Im übrigen verweise ich auf das Schrifttum, insbesondere CHAVES (1947). ...

David A. & W. Mary BANNERMAN visited the Azores islands in 1963 and 1964 and wrote the most comprehensive avifauna of the Azores (1966). They tried to reconstruct the scientific exploration of the islands and especially in 1964 worked hard to find recent evidence of the Azores Bullfinch (BANNERMAN 1965).

David Armitage BANNERMAN (\* 1886, †1979) temporarily belonged to the staff of the BMNH. His manuscript collection is stored at BMNH (pers. comm. R. PRYS-JONES). His

wife W. Mary BANNERMAN (\*1894, †1984), who was an eminent ornithologist and author in her own right, collaborated with her husband on a number of books (from BANNERMAN & BANNERMAN 1968, Cover; SERLE 1979, WARR 1996).

BANNERMAN & BANNERMAN (1966):

... Sr Alvares Cabral had been making searching enquiries on our behalf and had accumulated certain information from various acquaintances, landowners and priests who were reputed to have seen the bullfinch within the last two or three years. Most circumstantial was the tale of a priest of Povoacao who had recently eaten a priôlo in his provincial town. ... We enquired from Colonel Agostinho as to whether he believed the priôlo still existed. He declared emphatically that it is not extinct and that he had "heard of it within recent years" ...

... of Povoacao, and there we had a chance meeting with an intelligent man who assured us he had seen the object of our search the previous year in the winter, November or December, he was not sure which, at a place called Labacal which lies north-east of his village. That was our first encounter with anyone who swore to having seen a priôlo really recently. ...

... since our return home at the end of 1964 we have received news from Senhor Alvares Cabral that two professors of the Ecole Industrielle et Commerciale de Ponta Delgada, Drs. Antonio Macedo and Victor Cabral Macedo, have seen the priôlo at Nordeste in the summer of 1964. There is no reason to doubt the truth of that assertion.

... specimens in Museum P. Delgada from Collection Padre Ernesto FERREIRA (1933) ...

Having seen not a single Azores Bullfinch on their own expeditions the BANNERMANS believed that the birds still existed in the "inaccessible" mountains in the far east of Sao Miguel but they relied only on second-hand information.

Again RAMOS (1993) cites local sources concerning the existence of the Azores Bullfinch in the 1960s:

... Seen feeding on peach and pear orchards above Monto Simplicio and Nordeste (CHAVES 1964, Anonymus 1970, MENDOÇA and others, pers. comm.) ...

## 2.6. 1967 - 1988 - rediscovery and calls for conservation

The "official" rediscovery of the Azores Bullfinch by an ornithological authority in the year 1967 has to be attributed to VAN VEGTEN (1968), a Dutch ornithologist from the ZMA, University of Amsterdam.

During a short visit (October 1-9, 1967) to Sao Miguel, the main island of the Azores, I observed in the afternoon of October 5<sup>th</sup> an Azores Bullfinch (*Pyrrhula pyrrhula murina* GODMAN) in a dense *Cryptomeria*-forest on the steep slope (60°-70°), falling down to the northeast border of the Lagoa de Furnas, which is one of the crater-lakes in the eastern part of the island. The bird could be studied for about one minute with field glasses 7 x 50, from a distance of approximately 15 yards, and was easily identified. The deep black on the head and the green-yellowish appearance of the bird were quite striking. Especially the green-yellowish plumage is an outstanding feature compared with the bright pink and grey pattern of the European Bullfinch. Unfortunately the Priôlo (the bird's Portuguese name) flew off without calling, so its voice could not be compared with that of the continental form.

A postscript by K.H.V(OOUS) is added to Van VEGTEN's article (see also BANNERMAN & BANNERMAN 1968, BANNERMAN 1969):

... The above mentioned sight observation is confirmed by a bird of this species, caught alive by Dr. Carlos Manuel da Silva Mediros and Dr. Victor Cabral Macedo, "in a condition of extreme physical depauperation, at Ribeira do Guilherme, at 10 o'clock in the morning of the 13<sup>th</sup> January 1968. The bird died 24 hours afterwards". This is stated by Jose Maria Alvares Cabral, chairman of the board of the Department of Natural History, "Museu Carlos Machado", Ponta Delgada, in the "Correio dos Acores" (Azores Courier), a morning daily paper, no. 13947, of 16<sup>th</sup> January 1968. A photograph of the specimen is added on the front page and reference is made to the observation by Mr. Van Vegten. The locality where the bird was found is in the extreme eastern hilly portion of Sao Miguel, close to the place where Van Vegten observed the species three months earlier ...

Jan Anthonie Van VEGTEN (\* 1942) worked at the ZMA. In 1967 he joined an expedition with the Free University of Amsterdam on the ship "HM Snellius" exploring seabirds in the Atlantic. Suffering from seasickness he stayed on Sao Miguel from October 1-9 where he rediscovered the Azores Bullfinch as described above (VOOUS 1995).

On January 13<sup>th</sup> 1968 one specimen was captured near Nordeste. It died one day later and was given to the Museum at Ponta Delgada (CABRAL in VINCENT 1968, BRIEN et al. 1982).

During an expedition in 1969 (International Research Project Macaronesia) W. BACKHUYS and D. STURHAN (STURHAN 1973) mention the observation of small fringillid birds in the far west of Sao Miguel which according to them could have been Azores Bullfinches. But the locality and their own uncertainty do not confirm this observation.

In 1970 one Priôlo was observed near Povoacao (ACORES, 7526, October 4<sup>th</sup>, 1970) and in 1971 one Azores Bullfinch was captured in Furnas (Correio dos acores November 18<sup>th</sup> 1971; in RAMOS 1993, LEGRAND 1982a). Another specimen kept by MHNP shows Sept 1<sup>st</sup> 1971 as collecting date (nr 1987-657). It had been collected at Furnas by Joao Maniz FRIA and was donated to the museum by G. LEGRAND (pers. comm. J.F. VOISIN, MHNP).

KING (1981; J. M. Alvarez CABRAL 1977, pers. comm.) writes about an unconfirmed report that two bullfinches were heard in 1975.

At the end of the 1970s Gerard LEGRAND worked at the University of the Azores (LEGRAND 1980, 1983a, LEGRAND & FURTADO 1982) and reported frequently about "his rediscovery" of the Azores Bullfinch in the year 1979 "after decades of fruitless searches" (LEGRAND 1983b). He estimated the population to consist of 30 to 40 pairs and together with ICBP started an international call for its conservation (EVERETT & SPENCER 1982, LEGRAND 1982a,b, 1984, 1985, LEGRAND et al. 1982, WUNDERLICH 1986).

No observations of the Azores Bullfinch were made during the CANCAP-expedition of the RMNH in 1979 (DEN HARTOG & LAVALEYE 1981). In 1980 French botanists (BRIEN et al. 1982) were surprised to observe the Azores Bullfinch on a botanical excursion near Nordeste. On September 5<sup>th</sup> and 18<sup>th</sup> they saw and heard the birds and observed at least 3 individuals together.

In 1981 an expedition of RMNH, the Rijksherbarium of Leiden and the Geological Institute of the University of Groningen visited the Azores with the exploration vessel "Tydeman". DEN HARTOG stayed on Sao Miguel from May 22<sup>nd</sup> until May 24<sup>th</sup> and some days in mid June. He searched in vain round Furnas and Povoacao but spotted the Azores Bullfinch in the valley Ribeira do Guilherme on the slopes of Pico da Vara. In June he could observe the birds together with LEGRAND.

Knowing LEGRAND's pessimistic estimate of only 20 pairs living, DEN HARTOG calculated 50 to 80 pairs after having got an impression of the habitat concerned (DEN HARTOG 1983).

In 1993 LE GRAND (LEGRAND 1993) still considered the Azores Bullfinch to be on the no-return line to extinction mainly threatened by the aggressive spreading of exotic plants which invade and deteriorate the original laurel forests in the eastern part of Sao Miguel. GRIMMET & JONES (1989) gave an estimate of 40 to 80 pairs.

### 2.7. 1989 - 2000 - ecological studies and international conservation efforts

In 1989 a new era for the research and conservation of the Azores Bullfinch began when ornithologists from RSPB, especially Colin J. BIBBY, and from the University of the Azores, Jaime A. RAMOS, started methodical studies (BIBBY & CHARLTON 1991, BIBBY & al. 1992). They estimated a population of about 100 breeding pairs within a distribution range of about 500 ha (108-133 pairs, J.A. RAMOS in CRAMP & PERRINS 1994) resulting from point counts. The latest estimation for the period 1991 until 1996 calculates 60 - 200 pairs (RAMOS 2000). Between June 19<sup>th</sup> and 27<sup>th</sup> 1999 JÜRGENS (2000) observed a total of 12 (5 males and 7 females) Azores Bullfinches on Pico da Vara.

RSPB's strong conservation politics and the thesis of J.A. RAMOS (1993) "The status and ecology of the Priôlo or Azores Bullfinch, *Pyrrhula murina*" at the University of Oxford, prepared the way for practical conservation measures based on recent knowledge methodically obtained. The Azores Bullfinch is now largely restricted to the inaccessible parts of the laurel forests of Pico da Vara (Fig. 7) but juveniles may be seen around Furnas as well.

Studies on the biology and feeding ecology of the Azores Bullfinch followed (RAMOS 1994a,b, 1995a, 1996a,b, 1998). In 1995 an action plan for the conservation of the Azores bullfinch – now estimated 120 pairs – was presented by RAMOS (1995b) and strongly supported by BirdLife International, the European Council and the European Commission (MONTEIRO 2000, PEREIRA & al. 1998, RAMOS 1996c).

As we know today, neither the fruit-growers nor the hunting and collecting activities threatened the survival of the Azores Bullfinch to an equal extent as does the habitat deterioration during recent decades caused by invading exotic plants.

There is a high probability that specimens of *Pyrrhula murina* still exist hidden in museums or private collections. This paper hopefully will help to trace the origin of such specimens. It would be as well interesting to describe the eggs of *Pyrrhula murina* which seem to be missing from all collections as far as information could be gathered.

So the history of the scientific discovery, the time of collecting and decrease, the decades of uncertainty when the species was missing, hopefully will continue positively in the future when steps are undertaken to protect the species and its remaining habitats. Now the local people and the international community become aware of the Azores Bullfinch as one of the jewels of the Azores fauna. Independently of its taxonomic status this bird can be an indicator for protecting the indigenous laurel forests in the east of Sao Miguel, an important part of the remaining biodiversity of the Azores.





Fig. 7: Degraded habitat (with introduced *Cryptomeria japonica* and *Clethra arborea*) of *Pyrrhula murina* on the slopes of Pico de Vara, Sao Miguel, Azores. – G. AUBRECHT, July 1995.

### 3. History of the specimens known in museum collections including syntypes

From sources mentioned above and cited by CRAMP & PERRINS (1994) at least 91 specimens (+ 3 dubious eggs) of the Azores Bullfinch are stored in 14 different museum collections.

The big TSCHUSI Collection has been incorporated into the collections at NMW, Bayerische Staatssammlung München (via H. LAUBMANN) and at the Haus der Natur Salzburg (via P. E. TRATZ) (GENGLER 1924). Recent inquiries (E. BAUERNFEIND, NMW, J. REICHHOLF, Munich and N. WINDING, Salzburg) about the possible existence of specimens of the Azores Bullfinch from the TSCHUSI Collection were all answered negatively.

The Zoologisches Museum der Universität Hamburg does not have any of the 3 specimens donated by A. ATHEN (ATHEN 1925, pers. comm. 1998, C. BRAUN, H. HOERSCHELMANN, Hamburg).

The Museu Bocage in Lisbon (pers. comm. M. da Graca RAMALHINHO, 1997), MNCNM (pers. comm. Dr. J. BARREIRO) and the ZMMU in Moscow (pers. comm. Dr. P.S. TOMKOVICH) do not have any specimens of *Pyrrhula murina* in their collections.

Because of the historical viewpoint the documentation of specimens concentrates on collectors and collecting times. The fate of specimens as far as the place where they are recently stored is documented in the following chapter.

### Collectors and Collections

Collectors of *Pyrrhula murina* – the fate of specimens collected and collections known to keep specimens in 2000:

(A) leg. GODMAN, 1865 (>32) and coll. SALVIN & GODMAN (maybe they include also specimens received from CHAVES after 1865)	BMNH (originally 15)	BMNH (6) 1879.4.5.767 1879.4.5.768 1879.4.5.769 1879.4.5.770 1879.4.5.771 1879.4.5.772
	1879.4.5.1747	exch. Dr. Th. PLESKE, ZISP (1) 41106
	1879.4.5.1746 1879.4.5.1748 1879.4.5.1749 1879.4.5.1750 1879.4.5.1751 1879.4.5.1752	1 destroyed March 1892 5 missing
	1878.7.30.6	University Museum Manchester (1) B3052
	1878.7.30.5	MPUW (1) 15909, XV/12
	Coll. DRESSER (2)	University Museum Manchester (2) Bb2859 Bb2860
	Coll. SHARPE & DRESSER (1)	ZISP (1) 41107
	Coll. MENZBIER (1)	ZISP (1) 41105
	NMW (2) 62.955 62.956	
	ZMB (2) B.15108 B.15109	

**BMNH / NHM:**

The GODMAN collection is documented differently in the catalogues of the BMNH (SHARPE 1888, WARREN & HARRISON 1971, KNOX & WALTERS 1994) and by references in SHARPE (1906: 262, 364, 365).

SHARPE (1888): 7 syntypi (identical information by DRESSER 1876)

March 1865, 1 male, 2 females ad.

April 1865: 3 males, 1 female ad (1 male = type of species)

WARREN & HARRISON (1971): 6 syntypi

No. 1879.4.5.768, April 1865. Listed as the type by SHARPE (1888): "There are 5 other syntypes in the collection."

KNOX & WALTERS (1994): 6 syntypi

No. 1879.4.5.767 - 1879.4.5.772

March 1865: 1 male, 2 females ad

April 1865: 2 males, 1 female ad

PRYS-JONES (pers. comm. 1997) refers to this situation as follows:

All specimens collected by Goodman were available for the species description. The original register presumed 13 syntypes, No. 1879.4.5.767 - 1879.4.5.772 (6) and No. 1879.4.5.1746 - 1879.4.5.1752 (7). Of the latter 7 specimens 1 is listed as destroyed (March 1892), 1 exchanged with Dr. PLESKE 1893, 3 are listed as duplicates. 2 further specimens had been received from GODMAN earlier than the ones mentioned above (SHARPE 1906): 1878.7.30.5 and 1878.7.30.6. Both specimens had been exchanged with other museums (1878.7.30.5 to Warsaw in October 1890, 1878.7.30.6. to Manchester in January 1895).

Concluding the facts there is one specimen missing (male ad, April 1865) mentioned by SHARPE (1888) and DRESSER (1876) and the fate of 5 syntypi from the original register (13 specimens) is unknown at the moment.

Coll. Dresser:

DRESSER (1876) mentions in his text about the Azores Bullfinch GODMAN's species description from 1866 and lists the specimens which he was able to examine. These are the 7 specimens later listed by SHARPE (1888): "E Mus. SALVIN and GODMAN" and 2 specimens from his own collection "E Mus. H.E. DRESSER": male, female, St. Michael's, Azores, April 1865 (F.D. GODMAN). DRESSER sold his collection to J.T. THOMASSON who donated it to the Victoria University, Manchester in 1899. Henry Eeles DRESSER's (\* May 9th, 1838, Thirsk Bank, UK, † Nov. 28<sup>th</sup>, 1915, Cannes, France) bird collection came to the Manchester University Museum in 1899 (ROTHSCHILD 1916, MULLENS & SWANN 1917).

**Manchester University Museum, Manchester**

An enquiry there (pers. comm. M.V. HOUNSOME 1997) shows that the two specimens mentioned as collection "H.E. DRESSER" are still there. Both specimens are syntypes.

Reg.Nr. Bb2859: St. Michael's, Azores; April 1865, male, F. GODMAN; figured and described

Reg.Nr. Bb2860: St. Michael's, Azores; April 1865, female, F. GODMAN; figured and described

One more specimen is kept at the Manchester University Museum, which had been received from the BMNH in January 1895 (as mentioned above).

Reg. Nr. B3052: Azores, Reg.Nr. BM, 78.7.30.6.

### ZISP:

St. Petersburg, Nr. 41106: Br.Mus.Reg. 1747. Azores. Pres. by GO(G)DMAN & SALVIN, (male). This specimen is the one mentioned as exchanged with Dr. PLESKE (pers. comm. PRYS-JONES, V. LOSKOT, St. Petersburg). It is a syntype too.

St. Petersburg Nr. 41107: from Germany, "E.Mus. SHARPE & DRESSER" (female). Because the two specimens mentioned by DRESSER (1876) could be found at the Manchester museum this specimen is an additional one supposedly collected or obtained by GODMAN. SHARPE (1906: 340) describes the co-operation with DRESSER at the BMNH as well as their collections "Coll. SHARPE and DRESSER". It is still unclear why this specimen reached St. Petersburg via Germany.

St. Petersburg Nr. 41105: E. coll. Prof. MENZBIER (male), E. Mus. O.S. & E.D.G., male. It seems likely that Prof. MENZBIER received this specimen from the collection O. SALVIN & (E.?) F.D. GODMAN as did the museums NMW and ZMB. Whether it is a syntype or not can not be decided because the collecting date is lacking and GODMAN received additional specimens from the Azores after his own collecting expedition.

Dr. Theodor Dimitrievich PLESKE (\*July 23<sup>rd</sup> 1858, †1932) (pers. comm. E. BAUERNFEIND, NMW; V. LOSKOT, St. Petersburg) was a Russian zoologist at the museum in St. Petersburg and Prof. M. MENZBIER was a leading ornithologist in Russia during the late 19<sup>th</sup> century.

### MPUW:

Nr. inw. 15909, XV/12 ex Muzeum Zoologiczne Hr. Branickich w Warszawie No. 2140a, Ins. Azores (e Museo Britan.).

The whole collection of BRANICKI's Zoological Museum has been donated to the recent state museum in Warsaw in 1919. The registration number of the BMNH is Nr. 1878.7.30.5 and has been exchanged in October 1890 (pers. comm. T. HUFLEJT, Warsaw). Because of lacking data it cannot be recognized as a syntype, but it comes from the GODMAN Collection.

### NMW:

62.955 - (?März 1865) "Azores" (leg. GODMAN); (Acquisitionsnummer 1878/XVII/4), coll. SALVIN & GODMAN, Geschenk 1878.

62.956 - (?März 1865) "Azores" (leg. GODMAN); (Acquisitionsnummer 1878/XVII/4), coll. SALVIN & GODMAN, Geschenk 1878.

The 2 specimens were donated to NMW in 1878 by SALVIN & GODMAN (pers. comm. E. BAUERNFEIND, NMW).

### ZMB:

B.15108 Nr. 1 - IV 1865, male, St. Michaels, coll. I. GODMAN

B.15109 Nr. 2 - St. Michaels, coll. I. GODMAN

The 2 specimens were donated to ZMB at August 1<sup>st</sup> 1878 by O. SALVIN (Pers. comm. B. STEPHAN, ZMB).

(B) leg. ? (3 eggs), 1900 (1902 ?)	Coll. OCHS	Coll. JOURDAIN, BMNH (2) E1988.4.28
		Coll. SCHOENWETTER, Institut f. Zoologie, Halle/Saale (1), 132

### BMNH / NHM:

Reg.No. E1988.4.28: 2 eggs, Sao Miguel, Azores Islands. Date 2/6/1900. Source: Stadtrat OCHS, Otto Bamberg; JOURDAIN coll. With references to JOURDAIN (1910) and BANNERMAN & BANNERMAN (1966) these eggs are not sufficiently authenticated.

### Institut für Zoologie, Universität Halle / Saale:

In 1997 the collection SCHOENWETTER holds one egg supposed to be of *Pyrrhula murina* (Sign.Nr. 132) with the date 2.6.1902 and the locality Terceira, "etzoren" (pers. comm. D. HEIDECKE, Halle/Saale). Year and locality seem to be noted wrongly.

The similarity of collecting dates of the eggs held in BMNH (2/6/1900) and Halle/Saale (2/6/1902) are astonishing similar. R. PRYS-JONES (pers.comm.) suggests the idea that all eggs could possibly originate from the same clutch.

(C) leg. CHAVES ?, before 1901	MHNP (1) 1901-968	
		Museum Ponta Delgada (?)

### MHNP:

This specimen was donated by M. le Capitaine CHAVAS (CHAVES), the later director of the Museum at Ponta Delgada (pers. comm. J.F. VOISIN, MHNP).

(D) leg. OGILVIE-GRANT, 1903 (12)	BMNH (2)	BMNH (2) 1903.6.10.1 1903.6.10.2
690	ROTHSCHILD Coll. (10)	AMNH (4)
162		714658
164		714659
694		714660
		714661
		BMNH (6), 1 via MEINERTZHAGEN coll. 1904.12.31.114 1904.12.31.115 1904.12.31.116 1904.12.31.117 1904.12.31.118 1965.M.18056

**BMNH / NHM:**

KNOX &amp; WALTERS (1994):

- 1) 1904.12.31.114: April 1903, O.G., coll. ROTHSCHILD, male ad, Furnas
- 2) 1904.12.31.115: April 1903, O.G., coll. ROTHSCHILD, male ad, N Furnas
- 3) 1904.12.31.116: April 1903, O.G., coll. ROTHSCHILD, male, Sao Miguel
- 4) 1904.12.31.117: 25/3/1903, O.G., coll. ROTHSCHILD, female, N Furnas Valley
- 5) 1904.12.31.118: 25/3/1903, O.G., coll. ROTHSCHILD, male, N Furnas Valley
- 6) 1903.6.10.1.: Date ?, O.G., ad, N Furnas
- 7) 1903.6.10.2.: Date ?, O.G., ad, N Furnas

R. PRŶS-JONES (pers. comm.):

- 8) 1965.M.18056: 1903, O.G., coll. ROTHSCHILD (exchanged 1921 with MEINERTZHAGEN).

**AMNH:**

714658, male, N Furnas (1000 ft.), April 1903, Coll. OGILVIE-GRANT (no. 690), ex. ROTHSCHILD coll.

714659, male, above N Furnas (1000 ft.), 17 March 1903, Coll. OGILVIE-GRANT (no. 162), ex. ROTHSCHILD Mus.

714660, female, above N Furnas (1000 ft.), 17 March 1903, Coll. OGILVIE-GRANT (no. 164), ex. ROTHSCHILD Mus.

714661, female, N Furnas (1000 ft.), April 1903, Coll. OGILVIE-GRANT (no. 694), ex. ROTHSCHILD Mus.

OGILVIE-GRANT stayed on Sao Miguel only during March. It is not clear whether some of the specimens mentioned above are dated wrongly or whether these have been given to him later.

Of the 12 specimens collected by OGILVIE-GRANT 2 were given to the BMNH and 10 came to the ROTHSCHILD collection. Now 6 specimens of the ROTHSCHILD collection are held by the BMNH plus 2 originally donated to the BMNH. 4 specimens are kept by the AMNH, New York (pers. comm. A.V. ANDORS, New York).

---

(E) leg. CHAVES ("CLEAVES"), August 1904 (1)	obtained by LOWE 26/5/1907 (1)	BMNH (1) 1915.5.1.571
---	--------------------------------	--------------------------

---

This specimen from the BMNH listed in the catalogue of KNOX & WALTERS (1994) is very interesting because of the collecting date.

Reg.No. 1915.5.1.571, leg. May 26th, 1907, from Furnas, Sao Miguel, Azores Islands, P.R. LOWE, CLEAVES coll., male.

An inquiry at BMNH brought the following information:

This specimen wears two labels. The original field label says, "Augusto 1904, male, Furnas", the second label says "*Pyrrhula p. murina*, male, GODM., Furnas, Sao Miguel, Azores [26.V.07] 1855: Major CHAVES Coll., P.R. LOWE, 1915.5.1.571."

F. STEINHEIMER (BMNH) answering my question proposes the following explanation: OGILVIE had met CHAVES on his expedition in 1903 and CHAVES had sent further specimens to OGILVIE after he had returned to England. CHAVES may have collected a specimen in August 1904. When LOWE stayed on the Azores in 1907 he may have bought this specimen on May 26th, 1907. He did not mention it in LOWE (1908), possibly because he had not collected it himself.

(F) leg. R. von THANNER, 1907 (53 + 1)	ZFMK (49)	ZFMK (35)
		HENS, RMNH (1) 56962
		AMNH (2) 788231 788232
		NMW (1) - SCHIEBEL (2) 74.498 (Fig. 6) 1 missing
		Univ. Azores (2)
		ZMB (2) 50309 50311
		TSCHUSI (3), missing
		THANNER (2), missing
	4 missing	
	THANNER Collection (1), missing	

### ZFMK:

The collection at the ZFMK in Bonn holds 35 specimens (1996) from THANNER (only adult birds collected between March and May 1907 by THANNER). Before the year 1996 (pers. comm. R. van den ELZEN), 14 specimens have been given away:

1 exchanged in the house (1951), 2 exchanged with the AMNH (1962), 2 exchanged with SCHIEBEL, 2 exchanged with University of Azores (1983), 2 exchanged with ZMB (1950), 3 with TSCHUSI, and 2 sold to THANNER. As mentioned above in his letter THANNER kept 1 additional specimen for himself.

### AMNH:

Specimens at the AMNH (exchange 1962, pers. comm. A.V.ANDORS, New York):

788231, ad. male Provacao, April 1907, Coll. THANNER, 9, ex. Mus. A. KOENIG

AMNH 788232, female ad., Pico do Castelo b. Furnas, May 1907, Coll. THANNER 42, forms a pair with 43, ex. Mus. A. KOENIG.

**NMW:**

One specimen from the Collection SCHIEBEL (SCHIFTER & VAN DEN ELZEN 1986) is now at NMW.

74.498 male, April 1907, Povoacao, Sao Miguel, Azoren, Leg. R.v.THANNER, Coll. SCHIEBEL, Kauf 1957.

But it is not known where the second specimen (female ad., April 1907, Povoacao) from the SCHIEBEL Collection and the specimens from the TSCHUSI (male ad., April 1907, Lagoa nr. Furnas, 2 males ad., May 1907, Furnas) and THANNER (male ad., May 1907, Povoacao, female ad., May 1907, Furnas) collections remained.

**ZMB:**

The two specimens collected by THANNER as a pair, which are at ZMB, bear the following information (pers. comm. B. STEPHAN):

50309 - male, Furnas (Cratos), April 1907

50311 - female, Furnas (Cratos), April 1907

**RMNH – Naturalis:**

One specimen now held at RMNH can be traced back to THANNER's expedition.

The specimen, ad. male, RMNH 56962, was collected in April 1907 at Povoacao, Azores. It was received by the museum on 22 August 1968 as part of the private collection of P.A. HENS and it was donated to HENS by JORDANS (pers. comm. R.W.R.J. DEKKER, RMNH). A. von JORDANS has sent this specimen to Mr. P. HENS (Burgemeester van Valkenburg Houtem) for his private collection in 1950 (pers. comm. Dr. R. HUTTERER, ZFMK, Bonn). It is the specimen of the Bonn collection mentioned as "exchanged in the house".

JORDANS was curator and later director at the museum A. KOENIG in Bonn from 1921 until 1957 (GEBHARDT 1980).

HARTOG (1983) mentions about 200 museum specimens in diverse museums in Europe and America but does not refer to any sources. He mentions as well one specimen kept at RMNH (Leiden) shot by von THANNER in 1908 (?): "... one of the specimens shot by von THANNER in 1908 ...". The year 1908 has been cited wrongly as mentioned above.

---

(G) leg. ?, Oct. 1907	SNOUCKERT-V.MARLE Coll.	ZMA (2)
		42 106
		42 107

---

2 specimens of Azores Bullfinch now belonging to the Zoological Museum of the University of Amsterdam, show the collecting date 15 October 1907 (male ZMA 42 106, female ZMA 42107) with the collecting locality "Furnas".

According to a letter from the recent curator C.S. ROSELAAR, the original collector is not known:



... Apparently, the collector was not von THANNER, because the handwriting on the label differs and the make-up of the skins is quite different from the characteristic von THANNER - make. ... Our skins came from the SNOUCKAERT-Van MARLE collection, obtained 1980, the Priôlo skins were bought by SNOUCKAERT, but he did not note down from whom they were obtained. We know SNOUCKAERT (Baron SNOUCKAERT von Schauburg 1857-1936, HAFER 1997:123) has traded with von THANNER, but he did also with von THANNER's father, with KLEINSCHMIDT, and with many other collectors and bird dealers...

C.S. ROSELAAR supposes that THANNER maybe has ordered some more Priôlo specimens to be collected by local collectors after he had left Sao Miguel. The specimens may as well have been obtained from CHAVES as mentioned above. At the moment this seems to be the most plausible explanation about the origin of these study skins.

(H) leg. ?, 1914 or earlier, 1924 or earlier	Coll. A. ATHEN (3)	Zoologisches Museum Hamburg (3), all destroyed during war (?), (pers. comm. C. BRAUN and H. HOERSCHELMANN, Hamburg)
--	--------------------	---

(I) leg. CORREIA, 1927 (5)	AMNH (5) 222 487 222 488 222 489 222 490 222 491
----------------------------	---

The 5 specimens collected by CORREIA are kept at the AMNH (pers. comm. A.V. ANDORS, New York):

222487, male, Furnas, 11 November 1927, CORREIA, 720

222488, male, Furnas, 15 November 1927, CORREIA, 728

222489, male, Furnas, 15 November 1927, CORREIA, 727

222490, male, Furnas, 18 November 1927, CORREIA, 747

222491, female, Furnas, 11 November 1927, CORREIA, 721

(J) leg. FERREIA (1931)	CHAVIGNY & MAYAUD Coll.	MHNP (1) 1979-1132
-------------------------	-------------------------	-----------------------

With MAYAUD's collection this specimen (1979-1132) was added to the bird collection of MHNP in the late 1980s (pers. comm. J.F. VOISIN, MHNP).

(K) leg. FERREIA (?)	Museum Ponta Delgada (2)
----------------------	--------------------------

2 specimens of the collection Ferreia exist at the Museum in Ponta Delgada (BANNERMAN & BANNERMAN 1966).

(L) leg. J.M. FRIA (1971)	LEGRAND (1)	MHNP (1) 1987-657
---------------------------	-------------	----------------------

One specimen kept at MHNP shows Sept 1<sup>st</sup> 1971 as collecting date (Nr 1987-657). It had been collected at Furnas by Joao Maniz FRIA and was donated to the museum by G. LEGRAND (pers. comm. J.F. VOISIN, MHNP).

(M) leg. (?), in BANNERMAN & BANNERMAN (1966)	Museum Ponta Delgada (5)	
(N) leg. (?), in VINCENT (1968)	Museum Ponta Delgada (1)	
(O) leg. ? (1890)	Museum Ponta Delgada (1)	Staatl. Mus. f. Tierkunde, Dresden (1) C 21278

The only specimen (C 21278) of the Staatliches Museum für Tierkunde was collected 1890 in Sao Miguel, Dr. A. BRAUNE brought it from the Museum Ponta Delgada 1913 (pers. comm. S. ECK).

Table 1: List of museum collections holding specimens of *Pyrrhula murina*.

ZFMK		35 specimens (23 males, 12 females)	leg. THANNER (1907)
BMNH / NHM	Syntype	1879.4.5.767	leg. GODMAN (1865)
	Syntype	1879.4.5.768	leg. GODMAN (1865)
	Syntype	1879.4.5.769	leg. GODMAN (1865)
	Syntype	1879.4.5.770	leg. GODMAN (1865)
	Syntype	1879.4.5.771	leg. GODMAN (1865)
	Syntype	1879.4.5.772	leg. GODMAN (1865)
		1988.4.28 (2 eggs)	leg. ? (OCHS) (1900)
		1904.12.31.114	leg. OGILVIE-GRANT (1903)
		1904.12.31.115	leg. OGILVIE-GRANT (1903)
		1904.12.31.116	leg. OGILVIE-GRANT (1903)
		1904.12.31.117	leg. OGILVIE-GRANT (1903)
		1904.12.31.118	leg. OGILVIE-GRANT (1903)
		1903.6.10.1	leg. OGILVIE-GRANT (1903)
		1903.6.10.2	leg. OGILVIE-GRANT (1903)
		1965.M.18056	leg. OGILVIE-GRANT (1903)
		1915.5.1.571	leg. CHAVES? (1904)
	AMNH		222487
		222488	leg. CORREIA (1927)
		222489	leg. CORREIA (1927)
		222490	leg. CORREIA (1927)
		222491	leg. CORREIA (1927)
		714658	leg. OGILVIE-GRANT (1903)
		714659	leg. OGILVIE-GRANT (1903)
		714660	leg. OGILVIE-GRANT (1903)
		714661	leg. OGILVIE-GRANT (1903)
		788231	leg. THANNER (1907)
	788232	leg. THANNER (1907)	
ZMB	Syntype	B.15108	leg. GODMAN (1865)
	Syntype	B.15109	leg. GODMAN (1865)
		50309	leg. THANNER (1907)
		50311	leg. THANNER (1907)

NMW	Syntype	62.955, Ac.Nr. 1878/XVII/4	leg. GODMAN (1865)
	Syntype	62.956, Ac.Nr. 1878/XVII/4 74.498	leg. GODMAN (1865) leg. THANNER (1907)
MHNP		1901-968	leg. CHAVES? (<1901)
		1979-1132	leg. FERREIA (1931)
		1987-657	leg. FRIA (1971)
St. Petersburg	Syntype	Nr. 41105	leg. ? (ex Coll. SALVIN & GODMAN)
		Nr. 41106	leg. GODMAN (1865)
		Nr. 41107	leg. ? (ex Coll. SHARPE & DRESSER)
Manchester		B3052	leg. ? (ex. Coll. BMNH)
	Syntype	Bb2859	leg. GODMAN (1865)
	Syntype	Bb2860	leg. GODMAN (1865)
ZMA		42106	leg. ? (1907)
		42107	leg. ? (1907)
RMNH		56962	leg. THANNER (1907)
MPUW		15909	leg. ? (ex. Coll. GODMAN)
Univ. Azores			leg. THANNER (1907)
			leg. THANNER (1907)
Ponta Delgada		1425	leg. ?
		1426	leg. ?
		1427	leg. ?
		1428	leg. ?
		1429	leg. ?
		1218	leg. FERREIRA (?)
		1215	leg. FERREIRA
		?	leg. ? (VINCENT 1968)
Halle/Saale		132 (1 egg)	leg. ? (OCHS) (1900)
Dresden		C 21278	leg. ? (ex. Coll. Ponta Delgada)

### Acknowledgements

For helping me to satisfy my peculiar interests I thank my colleagues J.A. RAMOS (University of the Azores) who is the best recent expert on the biology and ecology of the Azores Bullfinch, H.M. BERG (Library of the Bird Collection, NMW, Wien), A. KOURGLI (Library, NMW, Wien) who willingly helped to dig for literature, E. BAUERNFEIND, A. GAMAUF (NMW, Wien), R. van den ELZEN and R. HUTTERER (ZFMK, Bonn), C. S. ROSELAAR (ZMA, Amsterdam), B. STEPHAN (ZMB, Berlin), J.F. VOISIN (MHNP, Paris), R.W.R.J. DEKKER (RMNH, Leiden), D. HEIDECHE (Martin-Luther Universität, Halle/Saale), A.V. ANDORS (AMNH, New York), V. LOSKOT (ZISP, St. Petersburg), P.S. TOMKOVICH (ZMMU, Moscow), R. PRYS-JONES, F. STEINHEIMER (BMNH / NHM, Tring), M. da GRACA RAMALHINHO (Museu Bocage, Lisbon), T. HUFLEJT (Museum and Institut for Zoology, Warsaw), M.V. HOUNSOME (University Museum Manchester), A.S. FRIAS, F.M. MEDEIROS (Univ. Azores), and S. ECK (Staatl. Mus. f. Tierkunde, Dresden) who provided lists of *Pyrrhula murina* specimens held in their collections, literature and personal letters of persons involved in the history of this bird species. J.P. CONSTANCIA (Museu Carlos Machado, Sao Miguel) kindly showed me the *P. murina* specimens in his museum and helped me to get into contact with the local ornithologists. For further help with obtaining literature or information about collections I want to thank the Zoological Garden in Schönbrunn (Wien), H. WINKLER (Konrad Lorenz-Institute for Comparative Ethology, Wien), J. REICHOLF (Bayerische Staatssammlung Munich), N. WINDING (Haus der Natur, Salzburg), C. BRAUN, H. HOERSCHELMANN (Zoologisches Museum, Hamburg), G. DELGADO CASTRO (Museum of Natural History, Tenerife), and J. BARREIRO (Museu Nacional de Ciencias Naturales, Madrid). For critically reading the manuscript during progressing stages I thank R. van den ELZEN and R. HUTTERER, Bonn, E. BAUERNFEIND, A. GAMAUF and H. SCHIFTER (NMW), J. A. RAMOS (Inst. Piaget, Portugal), R. PRYS-JONES and D. SNOW (BMNH / NHM, Tring). The Travel agency TUI, Linz, sponsored the printing of Fig. 2.

Finally I want to thank my wife Margit and my son Christoph who share my interest in the Azores.

## References

- AGOSTINHO J., 1934/35: Ornitologia açoreana. Notas sobre alguns trabalhos recentes. – *Acoreana* 1,2: 113-133.
- AGOSTINHO J., 1947: Ornitologia acoriana. – *Acoreana* 4,3: 182-183.
- AGOSTINHO J., 1953/54: Notas ornitológicas. – *Acoreana* 5,2: 184-186.
- AGOSTINHO J., 1963: Variations dans l'avifaune des Açores. – *Alauda* 31,4: 305-307.
- AGOSTINHO J., 1964: Notas ornitológicas. – *Acoreana* 6,1: 72-83.
- Anonymus, 1843: *Agricultur Michaelense*, 15. Sept. 1843 (in BANNERMAN & BANNERMAN 1966).
- Anonymus, 1922: [Nachruf THANNER von Schriftleitung.] – *Ornithologische Monatsberichte* 30: 139.
- Anonymus, 1970: O Priôlo ave rara dada como extinta continua a viver na nossa ilha! – *Acores* 7526 (4 de Outubro): 1-2.
- ATHEN A., 1925: Atlantische Vögel. – *Gefiederte Welt* 54: 4-6, 14-15, 27-28, 38-39, 50-52, 64-66.
- AUBRECHT G. & RAMOS J.A., 1997: Der Azorengimpel - verfolgt, verschollen, wiederentdeckt. – *Gefiederte Welt* 121,3: 76.
- BANNERMAN D.A., 1923: [Nachruf THANNER.] – *Ibis* 11,5: 163.
- BANNERMAN D.A., 1965: Some reflections on two recent visits to the Azores Archipelago. – *L'Oiseaux et La Revue Francaise d'Ornithologie* 35: 22-34.
- BANNERMAN D.A., 1969: Recent records new to the North Atlantic Islands. – *Bulletin of the British Ornithologists' Club* 89: 86-88.
- BANNERMANN D.A. & BANNERMANN W.M., 1966: *Birds of the Atlantic Islands. Vol. III, A history of the birds of the Azores.* – Oliver & Boyd, Edinburgh, 164-169, pl. 28.
- BANNERMANN D.A. & BANNERMANN W.M., 1968: *Birds of the Atlantic Islands. History of the birds of the Cape Verde Islands. Appendix.* – Oliver & Boyd, Edinburgh. Addenda to Volumes II-III. p. 452.
- BENNEL M.J., 1963: Report of the Oxford University Women's Azores Expedition 1960. – Church Army Press, 1-28.
- BIBBY C.J., BURGESS N.D. & HILL D.A., 1992: *Bird Census Techniques.* – London, pp. 102-103.
- BIBBY C.J. & CHARLTON T.D., 1991: Observations on the Sao Miguel Bullfinch. – *Acoreana* 7: 297-304.
- BIBBY C.J., CHARLTON T.D. & RAMOS J.A., 1992: Studies of West Palearctic birds. Azores bullfinch. – *British Birds* 85: 677-680.
- BOCAGE J.V., 1866: *A ornithologia dos Açores.* – *J. orn. de Sci., Mathem. Phys. Nat., Lisboa*, Vol. 1: 89-92.
- BOLLE C., 1860: *Andeutungen azorischer Ornithologie.* – *Journal für Ornithologie* 8: 348-357.
- BRIEN Y. BESSEC A. & J.Y. LESOUF 1982: Observations du Bouvreuil et du Pigeon ramler des Açores. – *L'Oiseaux* 52: 87-89, Tafel I.
- CABRAL J.M., 1964: Observations ornithologiques dans l'île de Sao Miguel. – *Acoreana* 6,1: 49-60.
- CHAVES A., 1964: O Priôlo, por que serà esta ave exclusiva de S. Miguel. – *Os Açores* 1(7): 1-16.
- CHAVES F.A., 1923: O Priôlo, a ave mais interessante da ilha de S. Miguel. – *Revista Os Açores* 7: 7-9.
- CHAVES F.A., 1947: O Priôlo, a ave mais interessante de ilha de Sao Miguel. – *Acoreana* 4,2: 109-116. (Reprint from CHAVES 1923) + Addendum.

- CHAVIGNY J. DE & MAYAUD N., 1932: Sur l'avifaune des Açores Generalites et Etude contributive. – *Alauda* 4: 133-155, 304-348, 416-441.
- CLEMENT P., 1993: Finches & Sparrows. An Identification Guide. – London, 500 pp.
- CRAMP S. & PERRINS C.M., 1994: Handbook of the Birds of Europe the Middle East and North Africa. – Oxford, Vol. VIII, pp. 815-832.
- DRESSER H.E., 1876: History of the Birds of Europe. – London, Vol. IV.: *Pyrrhula murina* (Azorean Bullfinch): 2 p., pl. 200.
- DROUET H., 1861: Elements de la Faune Açoreenne. – Mem. Soc. Acad. de l'Aude 25, 245 pp.
- ECK S., 1996: Die palaearktischen Vögel - Geospezies und Biospezies. – Zool. Abh. Staatl. Mus. f. Tierkunde Dresden 49 (Suppl.): 1-103.
- EHRMANN P., 1916/17, 1918: Heinrich SIMROTH. Ein Nachruf. – Sitzungsberichte Naturforschende Gesellschaft Leipzig 43/44: 47-81 (+ portrait).
- EVERETT M. & B. SPENCER, 1982: Sao Miguel Bullfinch. – *British Birds* 75: 595-596.
- JÜRGENS R., 2000: Vom Azorengimpel *Pyrrhula pyrrhula murina*. – Ornithologische Mitteilungen 52,4: 131-134.
- FERREIRA P. E., 1933: Nota Breve sur l'Avifauna des Açores. – O Autonomico, Ano 35, 1617, 1 Julho 1933, Vila Franca do Campo.
- FRUCTUOSO G., 1924, 1926, 1931: Saudades da terra. – Manuskript aus dem 16. Jahrhundert. Abdruck. Ponta Delgada, S. Miguel (cited in BANNERMAN & BANNERMAN 1966).
- GEBHARDT L., 1964: Die Ornithologen Mitteleuropas. – Gießen. 403 pp.
- GEBHARDT L., 1980: Die Ornithologen Mitteleuropas. Ein Nachschlagewerk. Band 4. – Journal für Ornithologie 121, Sonderheft, 80 pp.
- GEBHARDT L. & SUNKEL W., 1954: Die Vögel Hessens. – W. Kramer, Frankfurt/M., p. 67 [+ photo Mr. OCHS].
- GENGLER J., 1924: Viktor von TSCHUSI zum Gedächtnis. – Verhandlungen Ornithologische Gesellschaft Bayern 16: 86-90.
- GODMAN F. D., 1866: On the birds of the Azores. – *Ibis* 2: 88-108, pl.7.
- GODMAN F. D., 1870: Natural History of the Azores or western Islands. – Van Voorst, London, 358 pp.
- GRAY G.R., 1870: Hand-list of Genera and species of Birds, distinguishing those contained in the British Museum. – Part II: p. 99, nr. 7484. London.
- GRIMMET R.F.A. & JONES T.A., 1989: Important Bird Areas in Europe. – ICBP Techn. Publ. 9: 555-558.
- HAFFER J., 1997: Ornithologen-Briefe des 20. Jahrhunderts. – *Ökologie der Vögel* 19: 980 pp.
- HAGEMEIJER W.J.M. & BLAIR M.J. (eds.), 1997: The EBCC Atlas of European Breeding Birds. – London. 903 pp.
- HARTERT E. & OGILVIE-GRANT W., 1905: On the birds of the Azores. – *Novitates Zoologicae* 12: 80-128.
- HARTOG J.C. DEN, 1983: Op zoek naar de priôlo, de zeldzame goudvink van de Azoren. – *Artis* 29: 58-63.
- HARTOG J.C. DEN & LAVALEYE M.S.S., 1981: Bird observations in the Azores (12 September - 1 November 1979). CANCAP Project. Contributions to the zoology, botany and paleontology of the Canarian-Cape Verdean region of the North Atlantic Ocean. 10. – *Bocagiana* 56: 1-19.

- HAZEVOET C.J., 1996: Conservation and species lists: taxonomic neglect promotes the extinction of endemic birds, as exemplified by taxa from eastern Atlantic islands. – *Bird Conservation International* 6: 181-196.
- IUCN, 1986: 1986 IUCN Red List of threatened Animals. – Cambridge, p. 31.
- JOURDAIN F.C.R., 1910: 162<sup>nd</sup> Meeting of the Club. – *Bulletin of the British Ornithologists' Club* 25: 118-119.
- KING W.B., 1981: *Endangered Birds of the World*. – Washington.
- KNECHT S., 1961: Ein Beitrag zur Kenntnis der azorischen Vogelwelt. – *Anzeiger ornithologische Gesellschaft Bayern* 4,2: 121-137.
- KNECHT S., 1967: Einer der seltensten Vögel, aber dennoch ein Aschenputtel. Der Azorengimpel. – *Das Tier* 1967/4: 20-21.
- KNECHT S., 1968: Der Azorengimpel. – *Vogelkosmos* 5: 158.
- KNECHT S. & U. SCHEER G., 1971: Die Vögel der Azoren. – *Bonner zoologische Beiträge* 22(3-4): 275-296.
- KNECHT S. & U. SCHEER G., 1972: Die Liste der Vogelarten von Sao Miguel/Azoren des Gaspar FRUCUOSO (1591). – *Bonner zoologische Beiträge* 23: 66-69.
- KNOX A., 1989: Proposed changes to the Voous list. – *British Birds* 82: 119-120.
- KNOX A.G. & WALTERS M.P., 1994: Extinct and Endangered Birds in the collections of The Natural History Museum. – *British Ornithologists' Club Occasional Papers* 1: 260-261.
- LEGRAND G., 1980: Preliminary ornithological bibliography of the Azores. – *Arquipelago* 1: 81-89.
- LEGRAND G., 1982a: O Priôlo, a ave mais interessante de Sao Miguel. – *Acoreana* 6: 195-209.
- LEGRAND G., 1982b: Avifauna terrestre menacees aux Acores. – *Univ. Acores*, 13 pp.
- LEGRAND G., 1983a: Check list of the birds of the Azores. – *Arquipelago* 4: 49-58.
- LEGRAND G., 1983b: Der wiederentdeckte Azorengimpel. – *Wir und die Vögel* 15,1: 37-38.
- LEGRAND G., 1984: Ornithologie et conservation aux Acores. – *Univ. Acores*, 250 pp.
- LEGRAND G., 1985: In situacion de las avifauna de la Peninsula Iberica, Baleares y Macaronesia. – CODA-SEO, Madrid, 207 pp.
- LEGRAND G., 1989: -- In: R.F.A. GRIMMET & T.A. JONES, 1989: Important Bird Areas in Europe. ICPB Technical Publication 9.
- LEGRAND G.W., 1993: Ecological Conservation in the Azores. – *Courier Forschungs-Institut Senckenberg* 159: 33-37.
- LEGRAND G. & FURTADO D., 1982: Ornithological Bibliography of the Acores. – *Boletim do Museu Municipal do Funchal* 34(150): 142-190.
- LEGRAND G., SJOGREN E. & FURTADO D.S., 1982: Pico de Vara: uma zona de valor internacional a preservar. – 76 pp.
- LOWE P.R., 1908: Letter. – *Ibis* 2: 198-199.
- LOWE P. & BANNERMAN D., 1930: The Extermination of the Azorean Bullfinch. – *Ibis* 6: 374-379.
- MAYR E., 1997: Reminiscences of Leonard C. SANFORD (1878-1950). – In: J. HAFFER, *Ornithologen-Briefe des 20. Jahrhunderts. Ökologie der Vögel* 19: 822-824.
- MAYAUD N., 1937: Nouvelles donnees sur l' Ornithologie des Acores. – *Alauda* 9, 313-330.
- MAYAUD N., 1947: Commentaires et additions aux notes d'ornithologie acoreenne de L. SPOLTON. – *Alauda* 15: 29-33.

- MEARNS B. & MEARNS R., 1988: Biographies for Birdwatchers. The Lives of Those Commemorated in Western Palearctic Bird Names. – London. 490 pp.
- MEARNS B. & MEARNS R., 1992: Audubon to Xantus. The Lives of Those Commemorated in North American Bird Names. – London. 588 pp.
- MONTEIRO L.R., 2000: The Azores. – In: HEATH F. & M.I. EVANS (eds.), Important Bird Areas in Europe. Vol. 2, Southern Europe, 463-472.
- MORELET A., 1860: Notice sur l'histoire naturelle des Açores. – J.B. Bailliere & Fils, Paris.
- MULLENS W.H. & SWANN H.K., 1917: DRESSER (Henry Eeles), 1838-1915. – A bibliography of British Ornithology. London, pp. 178-180.
- MURPHY R.C., 1923: Notes on a Small Collection of Birds from the Azores. – Ibis 44: 9 and 190.
- MURPHY R.C. & CHAPIN J.P., 1929: A Collection of Birds from the Azores. – American Museum Novitates 384: 1-23.
- MURPHY R.C. & CHAPIN J.P., 1930a: Letter to editor of Auk. – Auk 47: 300-301.
- MURPHY R.C. & CHAPIN J.P., 1930b: The Bullfinch of the Azores. – Ibis 6: 537-539.
- OSHIMA H., 1955: A trip round the Azores Islands. – Acoreana 5,3: 199-229.
- PEREIRA M.J., MOURA M., MACIEL G.B. & OLIVEIRA J.B., 1998: Conservation of natural vegetation in Azores islands. – Boletim do Museu Municipal do Funchal Suppl. 5: 299-305.
- PUCHERAN M., 1859: Observations sur deux espèces de Passereaux originaires des Açores. – Revue et Magasin de Zoologie 11, ser. 2: 409-412.
- RAMOS J.A., 1993: The status and ecology of the Priôlo or Azores bullfinch, *Pyrrhula murina*. – Dphil thesis, Univ. Oxford.
- RAMOS J.A., 1994a: Fern frond feeding by the Azores Bullfinch. – Journal of Avian Biology 25,4: 344-347.
- RAMOS J.A., 1994b: The annual cycle of the Azores Bullfinch, *Pyrrhula murina* GODMAN, 1866 (Aves:Passeriformes). – Arquipelago 12A: 101-109.
- RAMOS J.A., 1995a: The diet of the Azores bullfinch *Pyrrhula murina* and floristic variation within its range. – Biological Conservation 71: 237-249.
- RAMOS J.A., 1995b (compiler): Action plan for the Azores Bullfinch (*Pyrrhula murina*). – Convention for the Conservation of European Wildlife and natural habitats. Seminar 19-23 June 1995, Strasbourg. 12 pp.
- RAMOS J.A., 1995c: O Priôlo: sua relacao com a floresta natural de altitude. – Nordeste (Acores), Camara Municipal de Nordeste.
- RAMOS J.A., 1996a: Introduction of exotic tree species as a threat to the Azores bullfinch population. – Journal Applied Ecology 33: 710-722.
- RAMOS J.A., 1996b: The influence of size, shape, and phenolic content on the selection of winter foods by the Azores bullfinch (*Pyrrhula murina*). – Journal Zoology 238: 415-433.
- RAMOS J.A., 1996c: Azores Bullfinch. In: B. HEREDIA, L. ROSE & M. PAINTER (eds.), Globally threatened birds in Europe. Action plans. – Council of Europe Publishing, Strasbourg, pp. 347-352.
- RAMOS J.A., 1997: *Pyrrhula murina*. Azores Bullfinch. – In: W.J.M. HAGEMEIJER & M.J. BLAIR (eds.), The EBCC Atlas of European Breeding Birds. London, p. 737.
- RAMOS J.A., 1998: Biometrics, weights, breeding and moulting seasons of passerines in an Azores cloud forest. – Ringing and Migration 19: 17-22.
- RAMOS J.A., 1999a: O Priôlo, ave singular de S. Miguel. – Pardela 10: 6-7.

- RAMOS J. A., 1999b: O Priôlo (*Pyrrhula murina*) e a floresta natural de altitude. – Câmara Municipal de Nordeste. 18 pp.
- RAMOS J.A., 2000: Azores Bullfinch *Pyrrhula murina*. – Bulletin of the African Bird Club 7,1: 31-33.
- ROTHSCHILD W., 1916: Henry Eeles DRESSER. – British Birds 9 (8): 194-196 (+ plate).
- SCHEER G., 1957: Einige Bemerkungen über die Vögel der Azoren. – Vogelwelt 4: 115-120. (Xarifa Expedition).
- SCHIFTER H. & VAN DEN ELZEN R., 1986: Die Typen der von Guide SCHIEBEL beschriebenen und der nach ihm benannten Vögel. – Annalen des Naturhistorischen Museums in Wien 88/89: 25-35.
- SCHÖNWETTER M., 1984: Handbuch der Oologie. – Berlin, pp. 452 and 483.
- SERLE W., 1979: David Armitage BANNERMAN (1886-1979). – Ibis 121: 520-522.
- SHARPE R.B., 1888: Catalogue of the Passeriformes, or perching birds, in the collection of the British Museum. – Vol. XII. Fringilliformes, Part II. London, 452-453.
- SHARPE R.B., 1906: The History of the Collection contained in the Natural History Departments of the British Museum. – Vol. II. London, pp. 79-515.
- SIMROTH H., 1888: Zur Kenntnis der Azorenfauna. – Archiv für Naturgeschichte 54: 179-234.
- SPOLTON L. & MAYAUD N., 1947: Notes d'Ornithologie Acoreenne. – Alauda 15: 29-33.
- STURHAN V.D., 1973: Ergebnisse der Forschungsreise auf die Azoren - 1969. VI. Beitrag zur Avifauna der Azoren. – Boletim do Museu Municipal do Funchal 27: 66-73.
- THANNER R. VON (1908: Ein kleiner Beitrag zur Lebensweise von *Pyrrhula pyrrhula murina* (GODM.). – Ornithologisches Jahrbuch 19(3/4): 120-124.
- TURTADO, 1884: cit. in BOLLE (1860).
- ULFSTRAND S., 1961: On the Vertebrate Fauna of the Azores. Aves. – Boletim do Museu Municipal do Funchal 14,49: 81-86.
- VAN VEGTEN J.A., 1968: The Azores Bullfinch not extinct. – Ardea 56: 194.
- VINCENT J., 1968: Red data book (Aves). – Morges, IUCN.
- VOOUS K.H., 1995: In de ban van vogels (Biography of VAN VEGTEN: p. 509-510). – Utrecht, 605 pp.
- WARR F.E., 1996: Manuscripts and Drawings in the Ornithology and ROTHSCHILD Libraries of the Natural History Museum at Tring. – British Ornithologists' Club Occasional Papers 2: 7-10.
- WARREN R.L.M. & HARRISON C.J.O., 1971: Type-specimens of birds in the British Museum (Natural History). – Vol 2, Passerines. London: p. 368.
- WUNDERLICH K., 1986: Ist der Priolo noch zu retten? Zur Bestandssituation des Azorengimpels (*Pyrrhula pyrrhula murina* GODMAN). – Beiträge Vogelkunde 32: 323-326.



# ZOBODAT - [www.zobodat.at](http://www.zobodat.at)

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Annalen des Naturhistorischen Museums in Wien](#)

Jahr/Year: 2000

Band/Volume: [102B](#)

Autor(en)/Author(s): Aubrecht Gerhard

Artikel/Article: [The Azores Bullfinch - \*Pyrrhula murina\* GODMAN, 1866: The history of a bird species: persecuted -missing - rediscovered - protected \(?\) \(including a list of all known specimens and syntypes\). 23-62](#)