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## Summary and Concluding Remarks

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Abstract.—Ten years have elapsed since the first International Owl Symposium was held in Winnipeg. The number of topic species was expanded from 22 (1987) to 61 (1997) and the topic was broadened from owls of the northern forest to those of the northern hemisphere. The number of studies reported expanded from 38 studies (mean = 5.76 years for study period duration) to 101 studies (mean = 4.89 years per study). Fifteen species were reported on in 1987 and 17 species in 1997. The Northern Saw-whet Owl (*Aegolius acadicus*) was the most reported species in 1997 and the Boreal or Tengmalm's Owl (*Aegolius funereus*) in 1987. A plea is made for more research on owls in lesser-known parts of the World and for conferences to call attention to those parts of the World where research is being conducted or needed.

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### SUMMARY

#### With Comparisons to 1987 Conference

It was an honor to be asked to summarize the 1987 Conference and I have been doubly honored to provide the summary and concluding remarks for this conference as well. For those readers of this report who attended the banquet, you will note some differences between the two. At the banquet my emphasis was (a) to provide the results of numerical "analysis" pertaining to the species reported on, geographic areas of study, etc. and (b) to urge researchers to become more actively involved in the conservation of owls in general and the owls that they are working on specifically. I tried to convince the listeners that while there were some great studies reported on here, there is perhaps an even more urgent need to address research to the southern hemisphere, especially in tropical Africa and the countries of the southwestern rim of the Pacific.

Returning to Manitoba is somewhat like "coming home" to me, having spent a couple of field seasons researching the Short-eared Owl<sup>2</sup> in the "bust" year of 1968 and the "boom" year of

1969. It was bust and boom for both the Microtine rodents and the Short-eared and Long-eared Owls as well as Northern Harriers (*Circus cyaneus*) that availed themselves of the great food availability in 1969 on the Manitoba prairies. Before the banquet a tall gentleman came up to me and asked me if I knew of anyone who could tell him about trapping Great Gray Owls. Very conveniently Bob Nero was standing nearby and I offered to introduce him to Bob. He then ended the joke on me by reminding me that he was Herb Copland and I realized that I had "been had." When I came to Manitoba, Bob Nero was one of the first people that I turned to for assistance in becoming familiar with the local scene and he was most generous in offering that. Herb was in charge of the nest record program and he also generously shared information from that program.

When my family and I left Manitoba in 1969, we headed west and enjoyed the warm hospitality of Mary and Stuart Houston in Saskatoon. Stuart was very busy then banding the many owls that resulted from the very high Microtine rodent population that Saskatchewan was also experiencing. It was a personal pleasure to hear Stuart report on about 50 years of banding here at the conference. In addition to the thousands of owls that he has banded, he has established a network of farmers and young banders which has, no doubt, benefited those cooperators in ways in which they probably do not even realize. His is a model that is well worth emulating by other researchers and conservationists.

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<sup>2</sup> See Appendix for a complete listing of owl species of the world common names and binomials taken from Sibley (1996).

Bob Nero and Lady Grayl have also set a fine example in the realm of conservation and probably few know about the thousands of dollars that they have raised for conservation and education projects, by visiting schools. Bob is no doubt aware of the role that the youth of Canada will play in its future and his and Lady Grayl's investment of time and effort, like Stuart's, is bound to pay large dividends in the future. It is heartening to see Bob "passing the baton" on to Jim Duncan. It seems apparent to me that Bob's "fingerprints" are on Jim when it comes to a respect for the resource that has brought us all here, i.e., owls. Jim's respect and passion, I am sure, goes beyond owls to the natural environment.

Another Canadian that I have had the privilege of knowing and working with is Katherine McKeever from Ontario. Kay and Larry have built a world-class facility for owl research. It started out as a raptor rehabilitation operation but shifted to just owls and then again to a captive-breeding facility and then to what it is now—a fine facility for behavioral research on owls. I would encourage anyone interested in doing basic behavioral research on owls to contact Kay. While I have focused on just a few giants in the field of owl research that I have had the privilege of knowing and working with, I am sure there are many others that I have omitted, simply because I have not had the pleasure of knowing them. And while I have dwelled on those with longer track records, there is plenty of cause for optimism with a very healthy crop of younger researchers evident at this conference.

One other comment by way of reminiscences has to do with the field trip to the boreal forest. I became very familiar with the grassland and aspen-parkland while working in Manitoba but did not become exposed to the boreal forest. On Saturday, three bus-loads of participants journeyed north to the Pine Falls area. It was a sunny, mild day with little wind and Microtine rodents had obviously done their thing which set the stage for a superb owling day. I personally saw, between conversations, 12 Northern Hawk Owls, 4 Great Gray Owls, and 4 Snowy Owls. It was also a good opportunity to enjoy a good look at the terrain that developed as a result of glaciation of the old lake bed of Lake Agassiz.

## MATERIALS AND METHODS

The material presented here is the result of the 1987 conference publication and the program and abstracts prepared for this conference. To be more comparable I should have used the programs for both conferences, but could not locate my earlier conference program. The analysis is only meant to show any major trends; it is what is available in those two documents, although an attempt was made to hear as many presentations as possible. Concurrent sessions this time, however, prevented my hearing them all. The number of topic species was expanded from 22 (1987) to 61 (1997) and the topic was broadened from owls of the northern forest to those of the northern hemisphere. The number of studies reported expanded from 38 studies (mean = 5.76 years for study period duration) to 101 studies (mean = 4.89 years per study) as shown in figure 1. The percent of studies for each duration period are shown for more direct comparison. In both cases one-year studies were the most frequent case with there being about a one-year average shorter duration for those studies reported in 1997.

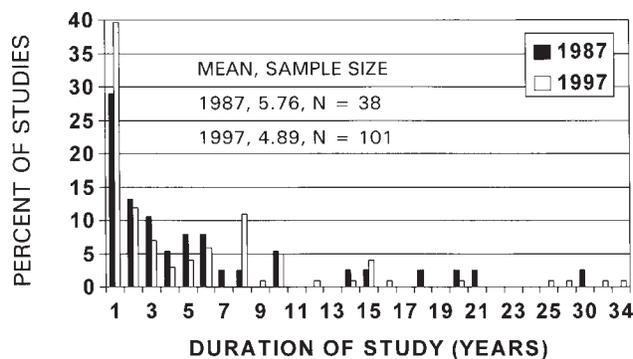


Figure 1.—Study period duration for research reported at the 1987 and 1997 owl symposium conferences compared. Note that the number of studies for each time period are percentages for direct comparison. Note also the discontinuity for the "Years of Study" scale.

The topics reported on are analyzed for those species that were candidates for both conferences (table 1) and then for those species that were added (table 2) for inclusion in this conference; i.e., northern hemisphere species, not just those of the northern forest. In table 1



Table 1.—Summary of owl symposium papers, subject species (according to the 1987 species list) and topic(s) reported on, for the 1987 conference compared to 1997. Total number of studies reporting are listed as 1987/1997 for comparison.

	AN <sup>1</sup>	DI	BB	FH	HA	NB	PO	R-T	T-P	TN
Flammulated Owl		1/	2/1		1/4	1/	1/			4/5
Eastern Screech-owl		1/	2/3	1/1	2/		1/	1/	4/	5/4
Western Screech-owl			/2	/1	/1					1/4
Common Scops-owl										1/
Striated Scops-owl										1/
Oriental Scops-owl										1/
Collared Scops-owl										1/
European Eagle-owl				1/			/2	1/		3/1
Great Horned Owl	3/			/2	1/	1/	1/5			7/7
Blakiston's Fish-owl										1/
Northern Hawk Owl	2/	/3	4/	1/	1/	4/		1/		8/3
Northern Pygmy-owl	1/									2/
Eurasian Pygmy-owl			1/	1/					1/	3/
Oriental Hawk Owl										1/
Barred Owl	2/		1/2		5/2	2/1		2/	1/	9/6
Spotted Owl		1/2	2/4	/1	1/2	2/		2/	1/	3/11
Great Gray Owl	2/1	2/	1/1/	5/1	7/1	4/	2/4	3/		12/8
Tawny Owl		/1	1/1	3/2	2/	1/	/1			4/5
Ural Owl			2/	1/2	1/	1/	/2	1/		3/4
Long-eared Owl	3/		1/1				/4			5/5
Boreal or Tengmalm's Owl	4/	3/	5/7	1/	5/	3/	1/3	2/	1/	14/10
Northern Saw-whet Owl	3/1		2/8	2/	4/	1/	1/3	1/	1/	9/12
	20/2	8/6	24/30	16/10	30/10	20/1	7/24	14/	9/	98/80

<sup>1</sup> Legend: Anatomy, Distribution, Basic Behavior, Food Habits, Habitat, Nesting Biology, Populations, Radio-Telemetry used, Tape-Playback, Total Number of studies reporting.

there was a decline in those reporting on anatomy, habitat, and nesting biology. There were no studies in this species list that indicated using either radiotelemetry or tape-playback techniques. There was a slight increase in studies that reported on breeding biology and a more than triple increase of population-centered studies. There is a suggestion that studies on the Northern Hawk Owl have declined but a good sign in the increase in the number of studies on the Western Screech-owl and, not surprisingly, the Spotted Owl.

Those species reported on in 1997 but not eligible for reporting in 1987 are summarized in table 2. There is a notable exception. The Lanyu Scops-owl, which may be a race of the Elegant Scops-owl (*Otus elegans botelensis*) or may represent a separate species, is definitely an owl of the northern hemisphere and was inadvertently left off the candidate list.

Severinghaus has continued her earlier work (1989) on this form which has been listed as endangered (King 1981). She provided us with a detailed report on the population dynamics, productivity and status of this owl. There were a healthy number of studies reporting on basic behavior, food-habits, habitats and the number reporting on population phenomena had more than tripled. Species emphasized included the Barn Owl and Burrowing Owl. No studies on "new" species using either radiotelemetry or tape-playbacks were reported.

All of the above has been fairly objective, but now I will become a bit more subjective. Examining just the titles in the 1997 program there are over 20 in which only the common name is given for the owl(s) reported on. If the reporter's goal is to reach as wide an audience as possible, then using the international language of biologists; i.e., the binomial, would

## 2nd Owl Symposium

Table 2.—Summary of owl symposium papers, subject species (according to the 1997 species list) and topic(s) reported on.

	AN <sup>1</sup>	DI	BB	FH	HA	NB	PO	R-T	T-P	TN
Barn Owl					1		6			6
Ashy-faced Owl										
African Grass-owl										
Mountain Scops-owl										
Balsas Screech-owl										
Pacific Screech-owl										
Whiskered Screech-owl										
Vermiculated Screech-owl										
Tropical Screech-owl										
Bearded Screech-owl										
Bare-shanked Screech-owl										
Puerto Rican Screech-owl										
Bare-legged Owl										
Crested Owl										
Spectacled Owl										
Spotted Eagle-owl										
Spot-bellied Eagle-owl										
Brown Fish-owl										
Tawny Fish-owl				1						1
Snowy Owl			3	1			1			5
Brazilian Pygmy-owl										
Ferruginous Pygmy-owl				1	1					3
Collared Owlet										
Javan Owlet										
Elf Owl										
Little Owl										
Spotted Owlet										
Burrowing Owl		1	3		1		3			8
Mottled Owl	1									1
Black-and-white Owl	1		1							2
Brown Wood-owl										
Hume's Owl										
Fulvous Owl										
Stygian Owl										
Striped Owl										
Short-eared Owl							2			2
Marsh Owl										
Jamaican Owl										
Unspotted Saw-whet Owl										
	<u>2</u>	<u>1</u>	<u>7</u>	<u>3</u>	<u>3</u>		<u>12</u>			<u>28</u>
	4 <sup>2</sup>	7	37	13	13	1	36			108

<sup>1</sup> Legend: Anatomy, Distribution, Basic Behavior, Food Habits, HAbitat, Nesting Biology, POpulations, Radio-Telemetry used, Tape-Playback, Total Number of studies reporting.

<sup>2</sup> Note subtotals for those species that were listed for the 1987 conference and reported on there also are carried forward from table 1.



seem to maximize his/her chances. That goes also for reaching the reading audience as well, for if only the title is picked up in electronic retrieval then the audience potentially expands greatly by including the binomial(s) in the title. There were over a half dozen in which no name was given at all, neither common nor binomial. This is not offered as criticism but rather a suggestion to think biologically and globally.

Looking at the geographic regions of the study locations (fig. 2) one can see that the expected large number of papers dealing with the United States and Canada was realized. While reports of studies originating in Scandinavia included papers from Finland, Norway, and Sweden in 1987, only studies from Finland were reported in 1997. Reports from other countries in 1987,

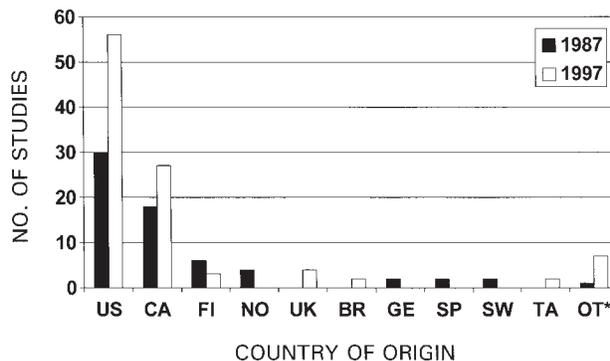


Figure 2.—Country of origin for studies reported on for 1987 and 1997 compared. Country Legends are: US = United States of America, CA = Canada, FI = Finland, NO = Norway, UK = United Kingdom, BR = Belarus, GE = Germany, SP = Spain, SW = Sweden, TA = Taiwan and OT\* is one report each from Africa, Costa Rica, France, Guatemala, Japan, Malawi, and USSR (1987).

but not reporting in 1997, included those from Germany, Spain, and the former USSR. Reports from countries not reported on before included those from the United Kingdom, Belarus, Taiwan, Costa Rica, France, Japan, Malawi, the Republic of Russia, and Guatemala.

### CONCLUDING REMARKS

This section will deal with a summary of owls of the world with a hope that the energies, enthusiasm, format and willingness to share with others from these two conferences and dealing with both the biology and conservation of owls will spread to other parts of the globe. There is no question in my mind that the format of them (a) has been one that has had an effect on the resource that we report on, i.e., the owls, and that (b) it should be emulated in other areas where the pressures on the owls is even greater than in the northern hemisphere. The owls are less known, more concentrated and in areas where the human population is typically more dense.

A comparison of the owls of the northern and southern hemispheres (table 3) shows that more than twice the land mass above water is found in the northern hemisphere while only 2 percent more owl species are confined to the northern hemisphere. One can also see that, on a percentage basis, more than twice as many owls of the southern hemisphere are threatened. Threatened, as used here, is that of the IUCN Red Book and does not indicate the level of threat (Sibley, pers. comm.).

Looking further at conditions that contribute to the threatening of owl species, Marcot (1995) has summarized very nicely the owls that are of old-growth forests in the world. He indicates that 83 of the total owl species of the world are

Table 3.—Extant owls<sup>1</sup> of the northern and southern hemispheres compared.

Hemisphere	Percent of land mass	No. spp. <sup>1</sup>	No. threatened <sup>1</sup>
Northern	67.8	78 (39) <sup>2</sup>	11 (14.1)
Southern	32.8	62 (37)	13 (28.9)
Both	100	60 (30)	1 (1.6)

<sup>1</sup> Compiled from Sibley (1996).

<sup>2</sup> Values in parentheses are percentage.

“closely associated with old, dense, or undisturbed forests... .” Of those 83 species, 26 species (31.3 percent) are found on islands or peninsulas, while 57 (68.6 percent) are found in continental situations (fig. 3). In addition, out of the last six extinctions, five (83.3 percent) were of owls associated with old-growth forests in island situations. If we are prone to think of this harvesting of old-growth forest as only important in the southern hemisphere, I will quote from an abstract of a paper presented at this conference. Mossop (1997) states “Pressures are building for human harvest of both old and larger trees, even in the northern extremes of the boreal forest.”

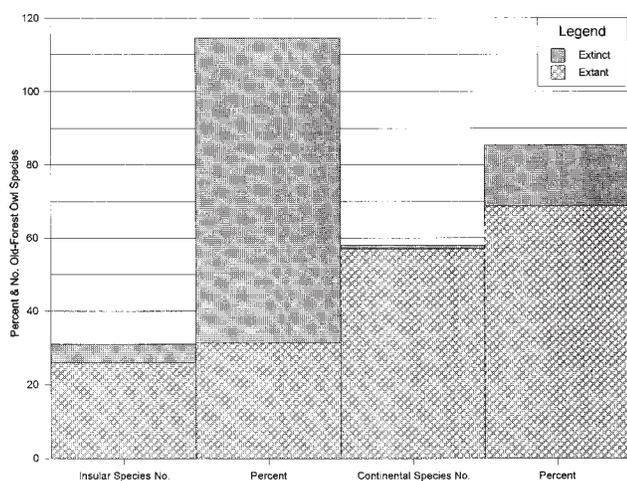


Figure 3.—Number of island (insular), old-forest owl species that currently exist (extant) versus those extinct, compared to those of continental settings (after Marcot 1995).

Turning to another facet of the global situation; i.e., the human population, Senator Gaylord Nelson of Wisconsin, founder of the Earth Day concept and now retired, gave raptor biologists something to think about. Speaking at an annual conference of the Raptor Research Foundation he invoked the “Rule of 70 Rule” which states that if you divide the annual growth rate of a population into the number 70 you will obtain the doubling time for that population. Realizing that the human population varies from region to region and country to country he used 50 years for the doubling time of the U.S. population (it is shorter for the World as a whole). He reminded his audience that with a population doubling, if you consider

all of the things that are now used by the existing population, they will also have to be doubled, unless the quality of life is to be diminished. That is, that population will need twice as many residences, twice as much transportation facilities, and twice as much food.

Brewer (1994) points out that humans expropriate (as of 1986) by direct use, co-option or by missing production, 41 percent of the potential new primary production of this planet. Direct use was only 3.2 percent with the remainder being either co-opted; i.e., on lands that are strictly dedicated to human use or missing production. In the latter category are declines resulting from (a) agriculture; e.g., cornfields versus tall grass prairie; (b) conversion of forest to pasture; (c) conversion of natural vegetation to malls, highways, factories, university research parks, etc.; and (d) desertification that has accompanied human occupation of dry savanna and grassland.

Before I am stereotyped as a doomsday biologist I would point out that I do believe that the present trends can be turned around. I will quote another abstract (Takats *et al.* 1997) which points out the purpose for setting up a model forest; i.e., to “develop and recommend an approach to sustainability and integrated resource management through research and technology developed by means of collaborative partnerships.” If the human population is to turn things around some of the critical ingredients for accomplishing it are contained in that statement of purpose.

Where do we go from here? It is heartening to see reports of research that is penetrating the vast realm of the unknown of the owls, and our, world; e.g., Butynski *et al.* (1996), Enríquez Rocha and Rangel (1997), and Gerhardt and Gerhardt (1997). Enríquez Rocha and Mikkola (1997) have attacked a new frontier with their sociological study of man’s perception of owls in Central America and Africa. This a necessary groundwork for education on owls and humans and the environments that we share.

New basic understandings of the Ferruginous Pygmy-owl have been presented by Proudfoot (1997a, 1997b). A healthy discussion about an unhealthy subject resulted from the Burrowing Owl Conservation Workshop. The species is definitely in need of considerable assistance in



the northern limits of its range in North America; i.e., southern Canada as well as elsewhere; e.g., parts of California. The embryonic North American Raptor Monitoring Strategy will hopefully rapidly become the American Raptor Monitoring Strategy so that it can be "exported" to all of the Western Hemisphere. It quickly became clear from that workshop that there is much information about basic owl vocalizations that is yet to be learned and/or yet to be added to nocturnal owl population monitoring.

And what about research that deals with those species that are more commonly known? These are species that are more commonly known because they more closely share "man's" environment. Because of that fact we must know much more about them.

There is always the problem, when you start citing individual works that you will leave someone's out. There are many old friends; i.e., "chronologically disadvantaged" and several new ones that fall into this category. Because of space limitations I must necessarily do this. To those whom I have not cited, my apologies. And to those whose presentations I did not hear I shall look forward to reading about your work in the Proceedings.

There is a basic triangle of research, education, and conservation that we are a part of and we need to participate in all three aspects if we are to ensure the future of the resource that has brought us together in Winnipeg; i.e., the owls. Those of you that concentrate on research are in the very best situation for educating your friends, colleagues, students, etc. and conserving the resource that you know so well.

More than once I have heard wildlife managers categorize wildlife problems as "people" problems. And often conservation problems are linked with that of technology. It does not take a genius to see what the future of this Earth, the only planet in the Universe known to contain life as we know it, will be with an ever-expanding human population and a diminishing resource base. To prevent this fate will take a global effort by people with emphasis placed on new technologies in conservation to parallel those technologies that we have developed to harvest and "consume" resources. If

people and their technologies have created problems, then it will take people to resolve those problems. Who will be the people to promote these ideas? It will also take massive education efforts by many, many more Bob Neros to develop in our young people an understanding, appreciation, and willingness to conserve "our" precious resources (fig. 4) and ourselves. As Pogo has been quoted: "We have met the enemy and he is us."



Figure 4.—The "Circle of Survival" for Man and fellow creatures of the spaceship Earth.

#### ACKNOWLEDGMENTS

I would like to thank the Symposium Committee for inviting me to return and the honor of summing up the Conference. Thanks also to Bob Nero and Jim Duncan for spearheading this event and for courtesies extended. Last but not least thanks to my wife Joanie who proofread the typescript for this article.

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APPENDIX



Owls of the World According to Sibley's Birds of the World (1996), Version 2.0

**A. Owl Species confined to the Northern Hemisphere**

- Minahassa Masked-owl (*Tyto inexpectata*)  
Cape Verde Barn Owl (*Tyto detorta*)  
Ashy-faced Owl (*Tyto glaucops*)
- White-fronted Scops-owl (*Otus sagittatus*)  
Andaman Scops-owl (*Otus balli*)  
Simeulue Scops-owl (*Otus umbra*)  
Luzon Scops-owl (*Otus longicornis*)  
Mindoro Scops-owl (*Otus mindorensis*)  
Mindanao Scops-owl (*Otus mirus*)  
Sao Tome Scops-owl (*Otus hartlaubi*)  
Pallid Scops-owl (*Otus brucei*)  
Flammulated Owl (*Otus flammeolus*)  
Oriental Scops-owl (*Otus sunia*)  
Elegant Scops-owl (*Otus elegans*)  
Mantanani Scops-owl (*Otus mantananensis*)  
Collared Scops-owl (*Otus lettia*)  
Japanese Scops-owl (*Otus semitorques*)  
Mentawai Scops-owl (*Otus mentawi*)  
Palawan Scops-owl (*Otus fuliginosus*)  
Philippine Scops-owl (*Otus megalotis*)  
Western Screech-owl (*Otus kennicottii*)  
Balsas Screech-owl (*Otus seductus*)  
Pacific Screech-owl (*Otus cooperi*)  
Oaxaca Screech-owl (*Otus lambi*)  
Eastern Screech-owl (*Otus asio*)  
Whiskered Screech-owl (*Otus trichopsis*)  
Bare-shanked Screech-owl (*Otus clarkii*)  
Bearded Screech-owl (*Otus barbarus*)  
Vermiculated Screech-owl (*Otus vermiculatus*)  
Bare-legged Owl or Cuban Screech-owl (*Otus lawrencii*)  
Puerto Rican Screech-owl (*Otus nudipes*)
- Lesser Eagle-owl (*Mimizuku gurneyi*)
- Eurasian Eagle-owl (*Bubo bubo*)  
Rock Eagle-owl (*Bubo bengalensis*)  
Pharaoh Eagle-owl (*Bubo ascalaphus*)  
Spot-bellied Eagle-owl (*Bubo nipalensis*)  
Shelley's Eagle-owl (*Bubo shelleyi*)  
Dusky Eagle-owl (*Bubo coromandus*)  
Philippine Eagle-owl (*Bubo philippensis*)
- Blakiston's Fish-owl (*Ketupa blakistoni*)  
Brown Fish-owl (*Ketupa zeylonensis*)  
Tawny Fish-owl (*Ketupa flavipes*)
- Snowy Owl (*Nyctea scandiaca*)
- Rufous Fishing-owl (*Scotopelia ussheri*)
- Spotted Wood-owl (*Strix seloputo*)  
Mottled Wood-owl (*Strix ocellata*)  
Tawny Owl (*Strix aluco*)  
Hume's Owl (*Strix butleri*)  
Spotted Owl (*Strix occidentalis*)  
Barred Owl (*Strix varia*)  
Fulvous Owl (*Strix fulvescens*)  
Ural Owl (*Strix uralensis*)  
Sichuan Wood-owl (*Strix davidi*)  
Great Gray Owl (*Strix nebulosa*)
- Northern Hawk Owl (*Surnia ulula*)
- Northern Pygmy-owl (*Glaucidium californicum*)  
Mountain Pygmy-owl (*Glaucidium gnoma*)  
Central American Pygmy-owl (*Glaucidium griseiceps*)  
Colima Pygmy-owl (*Glaucidium palmarum*)  
Tamaulipas Pygmy-owl (*Glaucidium sanchezi*)  
Cuban Pygmy-owl (*Glaucidium siju*)  
Eurasian Pygmy-owl (*Glaucidium passerinum*)  
Collared Owlet (*Glaucidium brodiei*)  
Guatemalan Pygmy-owl (*Glaucidium cobanense*)  
Cape Pygmy-owl (*Glaucidium hoskinsii*)  
Jungle Owlet (*Glaucidium radiatum*)  
Chestnut-backed Owlet (*Glaucidium castanonotum*)  
Chestnut Owlet (*Glaucidium castaneum*)
- Elf Owl (*Micrathene whitneyi*)
- Little Owl (*Athene noctua*)  
Spotted Owlet (*Athene brama*)  
Forest Owlet (*Athene blewitti*)
- Boreal (Tengmalm's) Owl (*Aegolius funereus*)  
Northern Saw-whet Owl (*Aegolius acadicus*)  
Unspotted Saw-whet Owl (*Aegolius ridgwayi*)
- Andaman Boobook (*Ninox affinis*)  
Philippine Boobook (*Ninox philippensis*)
- Jamaican Owl (*Pseudoscops grammicus*)

## 2nd Owl Symposium

### B. Owl Species confined to the Southern Hemisphere

Greater Sooty-owl (*Tyto tenebricosa*)  
Lesser Sooty-owl (*Tyto multipunctata*)  
Taliabu Masked-owl (*Tyto nigrobrunnea*)  
Lesser Masked-owl (*Tyto sororcula*)  
Manus Masked-owl (*Tyto manusi*)  
Bismarck Masked-owl (*Tyto aurantia*)  
Australian Masked-owl (*Tyto novaehollandiae*)  
Tasmanian Masked-owl (*Tyto castanops*)  
Madagascar Red Owl (*Tyto soumagnei*)  
African Grass-owl (*Tyto capensis*)  
Congo Bay-owl (*Phodilus prigoginet*)  
Sokoke Scops-owl (*Otus irenae*)  
Beccari's Scops-owl (*Otus beccarii*)  
Flores Scops-owl (*Otus alfredi*)  
Enggano Scops-owl (*Otus enganensis*)  
Seychelles Scops-owl (*Otus insularis*)  
Malagasy Scops-owl (*Otus rutilus*)  
Pemba Scops-owl (*Otus pembaensis*)  
Anjouan Scops-owl (*Otus capnodes*)  
Comoro Scops-owl (*Otus pauliani*)  
Wallace's Scops-owl (*Otus silvicola*)  
Koepcke's Screech-owl (*Otus koepckeeae*)  
West Peruvian Screech-owl (*Otus roboratus*)  
Cloud-forest Screech-owl (*Otus huberi*)  
Austral Screech-owl (*Otus usta*)  
Variable Screech-owl (*Otus atricapillus*)  
Hoy's Screech-owl (*Otus hoyi*)  
Long-tufted Screech-owl (*Otus sanctaecatrinae*)  
Palau Owl (*Otus podarginus*)  
Usambara Eagle-owl (*Bubo vosseleri*)  
Rusty-barred Owl (*Strix hylophila*)  
Rufous-legged Owl (*Strix rufipes*)

Tawny-browed Owl (*Pulsatrix koeniswaldiana*)  
Yungas Pygmy-owl (*Glaucidium bolivianum*)  
Subtropical Pygmy-owl (*Glaucidium parkeri*)  
Peruvian Pygmy-owl (*Glaucidium peruanum*)  
Austral Pygmy-owl (*Glaucidium nanum*)  
Tucuman Pygmy-owl (*Glaucidium tucumanum*)  
Javan Owlet (*Glaucidium castanopterum*)  
African Barred Owlet (*Glaucidium capense*)  
Ngami Owlet (*Glaucidium ngamiense*)  
Albertine Owlet (*Glaucidium albertinum*)

Long-whiskered Owlet (*Xenoglaux loweryi*)

Rufous Owl (*Ninox rufa*)  
Powerful Owl (*Ninox strenua*)  
Barking Owl (*Ninox connivens*)  
Sumba Boobook (*Ninox rudolfi*)  
Southern Boobook (*Ninox boobook*)  
Morepork (*Ninox novaeseelandiae*)  
White-browed Boobook (*Ninox superciliaris*)  
Moluccan Boobook (*Ninox squamipila*)  
Christmas Boobook (*Ninox natalis*)  
Jungle Boobook (*Ninox theomacha*)  
Manus Boobook (*Ninox meeki*)  
Bismarck Boobook (*Ninox variegata*)  
Russet Boobook (*Ninox odiosa*)  
Solomon Islands Boobook (*Ninox jacquinoti*)

Papuan Boobook (*Uroglaux dimorpha*)

Laughing Owl (*Sceloglaux albifacies*)

Madagascar Owl (*Asio madagascariensis*)

Fearful Owl (*Nesasio solomonensis*)

### C. Owl Species found in both the Northern and Southern Hemispheres

Sulawesi Owl (*Tyto rosenbergii*)  
Barn Owl (*Tyto alba*)  
Eastern Grass-owl (*Tyto longimembris*)

Oriental Bay Owl (*Phodilus badius*)

Reddish Scops-owl (*Otus rufescens*)  
Sandy Scops-owl (*Otus icterorhynchus*)  
Mountain Scops-owl (*Otus spilocephalus*)  
Javan Scops-owl (*Otus angelinae*)  
Sulawesi Scops-owl (*Otus manadensis*)  
Common Scops-owl (*Otus scops*)  
African Scops-owl (*Otus senegalensis*)  
Moluccan Scops-owl (*Otus magicus*)  
Rajah Scops-owl (*Otus brookii*)  
Indian Scops-owl (*Otus bakkamoena*)  
Sunda Scops-owl (*Otus lempiji*)  
White-faced Scops-owl (*Otus leucotis*)  
Tropical Screech-owl (*Otus choliba*)  
Rufescent Screech-owl (*Otus ingens*)  
Tawny-bellied Screech-owl (*Otus watsonii*)  
Middle American Screech-owl (*Otus guatemalae*)  
White-throated Screech-owl (*Otus albogularis*)

Great Horned Owl (*Bubo virginianus*)  
Cape Eagle-owl (*Bubo capensis*)  
Spotted Eagle-owl (*Bubo africanus*)  
Fraser's Eagle-owl (*Bubo poensis*)  
Barred Eagle-owl (*Bubo sumatranus*)  
Verreaux's Eagle-owl (*Bubo lacteus*)  
Akun Eagle-owl (*Bubo leucostictus*)

Buffy Fish-owl (*Ketupa ketupu*)

Pel's Fishing-owl (*Scotopelia peli*)  
Vermiculated Fishing-owl (*Scotopelia bouvieri*)

Brown Wood-owl (*Strix leptogrammica*)  
Mottled Owl (*Strix virgata*)  
Black-and-white Owl (*Strix nigrolineata*)  
Black-banded Owl (*Strix huhula*)  
Rufous-banded Owl (*Strix albitarsus*)  
African Wood-owl (*Strix woodfordii*)

Maned Owl (*Jubula lettii*)

Crested Owl (*Lophostrix cristata*)

Spectacled Owl (*Pulsatrix perspicillata*)  
Band-bellied Owl (*Pulsatrix melanota*)

Andean Pygmy-owl (*Glaucidium jardinii*)  
Hardy's Pygmy-owl (*Glaucidium hardyi*)  
Brazilian Pygmy-owl (*Glaucidium minutissimum*)  
Ferruginous Pygmy-owl (*Glaucidium brasilianum*)  
Pearl-spotted Owlet (*Glaucidium perlatum*)  
Red-chested Owlet (*Glaucidium tephronotum*)  
Sjostedt's Owlet (*Glaucidium sjostedi*)  
Asian Barred Owlet (*Glaucidium cuculoides*)  
Scheffler's Owlet (*Glaucidium scheffleri*)

Burrowing Owl (*Speotyto cunicularia*)

Buff-fronted Owl (*Aegolius harrisii*)

Brown Boobook (*Ninox scutulata*)  
Ochre-bellied Boobook (*Ninox ochracea*)  
Speckled Boobook (*Ninox punctulata*)

Stygian Owl (*Asio stygius*)  
Long-eared Owl (*Asio otus*)  
Abyssinian Owl (*Asio abyssinicus*)  
Striped Owl (*Asio clamator*)