

# Briefly... Compiled by Richard Fitter

The items under this title continue the service formerly supplied by the newsletter *Kingfisher*

## INTERNATIONAL

### Wetlands Convention in Force

The Convention on Wetlands of International Importance, which was completed at Ramsar, Iran, in 1971, came into force on December 21, 1975, when eight countries (Australia, Bulgaria, Finland, Greece, Iran, Norway, South Africa and Sweden) had ratified it. The UK also ratified in December. Seven other countries, which have signed but not yet ratified, are Belgium, West Germany, Ireland, Italy, Netherlands, Switzerland and USSR. The Convention aims to safeguard wetlands because of their high biological productivity, importance for science, education and recreation, and value as refuges for waterfowl. Thirteen wetlands have been listed in Britain.

### WWF's Achievement

During 1975 the World Wildlife Fund allocated a provisionally estimated total of \$2,460,020 in grants throughout the world. The overall total allocated since it started in 1962 is \$19,668,676. Three new national appeals were established: in New Zealand, Turkey and Venezuela.

### New WWF Trustees

On the retirement from the WWF Board of Trustees of the Aga Khan (Iran), Dr C. R. Gutermuth (USA) and Henry F. Tiarks (UK), the following new Trustees have been elected: Eskander Firouz (Iran), Axel A. Johnson (Sweden), A. W. Nielsen (Denmark) and Dr Francisco Kerdel Vegas (Venezuela). In addition Jose M. Mayorga has been elected a member of the Executive Council.

### J. Paul Getty Prize

This year's winner of the \$50,000 J. Paul Getty Prize is Salim Ali, the veteran Indian ornithologist.

### New IUCN Member

Pakistan has become the 42nd state member of IUCN. The National Council

for Conservation of Wildlife will act as the liaison agency.

### Przewalski Horses Increase

The net increase of Przewalski horses in the world's zoos during 1974 was 25, making a total of 103 stallions and 141 mares. Thirty-nine foals were born in 15 zoos during the year

### Historical Note

The sperm whale would have been exterminated by an earlier generation of whalers but for the discovery of petroleum in 1859 and the invention of the incandescent electric bulb by Edison twenty years later. Otherwise the stocks of sperm whales could not possibly have kept pace with the growing world demand for sperm oil.

## BRITISH ISLES

### Fishes Return to the Thames

No fewer than 82 species of fish have been recorded from the Thames between Fulham and West Thurrock since 1964, when the recent efforts of the authorities to clean the river up began to take effect. Common species now include the freshwater bleak, carp, dace, roach and tench, and the saltwater sand goby, tub gurnard, great and Nilsson's pipefishes, sprat, whiting and dragonet; fish equally at home in both fresh and salt water include the bass, bib, eel, flounder, stickleback and smelt. In 1973/74 14 salmon were taken from the Trent (compared with four the previous year) and six of them were alive.

### Death from Lead Pellets

It is estimated that some 400-700 wildfowl die every year in the Ouse Washes from lead poisoning due to eating lead pellets from shotguns. Mallard, pintail and teal are the principal species concerned.

### Bird Imports Inquiry

The Royal Society for the Protection of



Birds has launched a new inquiry – into the condition of birds arriving at London Airport – in the light of reports that the regulations of the International Air Transport Association on the packing densities of imported wild birds are being widely ignored by both importers and exporters.

#### Otter Hunting on Mull

The Council of the Scottish Wildlife Trust has expressed its strong opposition to otter hunting on the Hebridean island of Mull, where a pack of imported otter hounds pursued this non-traditional Highland sport during the summer of 1975.

#### Classifying British Vegetation

The Nature Conservancy Council is financing a National Vegetation Classification, a five-year project co-ordinated by Dr J. Rodwell of Lancaster University with the aid of a panel of ecologists chaired by Professor C. D. Pigott. It aims to provide an accurate and comprehensive inventory of vegetation types in the form of a list and description of named and systematically arranged associations. All natural, semi-natural and major artificial habitats of Great Britain will be surveyed.

#### New Year Honours

Four naturalists were recognised in the New Year honours list, with awards in the Order of the British Empire: two ornithologists, Bruce Campbell and Peter Conder, a mammalogist, Ernest Neal, and the chief land agent of the National Trust, Ivan Hills.

### EUROPE

#### Backward Farmers Endanger Camargue

A new report on pollution in the Camargue indicates that one of the chief dangers to the area is the mass of out-of-date notions and dubious agricultural practices that lead, without any benefit to the crops, to an unreasonably large build-up in the volume of irrigation water and an excessive use of pesticides (350 metric tons per year). The report urges that local farmers should be persuaded to end their slavish adherence to routine and tradition.

#### Mediterranean Biosphere Reserves

The Camargue in southern France, Mount Olympus in north-eastern Greece and the Forest of Circeo in Central Italy are among seven areas proposed for inclusion in the network of biosphere reserves in the Mediterranean.

#### No Bounties in Finland

The Finnish Parliament has passed a law to discontinue the official bounty of \$130 for killing a wolf or wolverine, and \$5 for killing a fox, grey seal or ringed seal. The Ministry of Agriculture will in future issue permits for reindeer breeders to shoot not more than ten wolves and ten wolverines in the worst hit cattle and reindeer areas.

#### Sweden Recycles Waste

Sweden has passed a law on recycling waste that among other things requires paper to be kept separate from other household waste and must be enforced by all municipalities by 1980.

#### Bear Poacher Caught

A poacher who killed an Abruzzo brown bear *Ursus arctos marsicanus*, a rare subspecies of which no more than 80–100 still exist, in October 1974 has recently been convicted and fined 180,000 lire (£130 or \$260) plus costs of 195,000 lire.

#### New Flower in the Abruzzo

A species of iris which had long been known in the Abruzzo National Park in central Italy has recently been determined as a species new to science, endemic in the park, and named *Iris marsica*.

### NORTH AMERICA

#### Grizzlies at Yellowstone

In June 1972 a young man was killed by a grizzly bear in Yellowstone National Park, Wyoming. In April 1975 the National Park Service lost a legal case brought against it for gross negligence and failure to accept the best scientific information available when devising its policy towards grizzly bears. This policy had involved stopping all grizzly bear research in the park and closing the rubbish dumps within the park at which the bears had been feeding. Research

workers had warned that too sudden closure of these dumps might lead to grizzly behaviour that would endanger the public (as did indeed happen in the tragic case of Harry Walker).

### **Bison Herd Reduced**

Aerial surveys have shown that the herd of woodland bison in the Wood Buffalo National Park, south of the Great Slave Lake in the Northwest Territories of Canada, has declined in numbers from about 2000 to about 1250. It has been decided to reinstate a hunting quota system for the first time since 1970.

### **216 More Endangered Species**

The Interior Department proposes to add 216 species to its endangered list to enable the United States to implement the International Convention on Trade in Endangered Species.

### **Critical Habitat for Six**

The US Fish & Wildlife Service proposes to determine, under the Endangered Species Act, 1973, the habitat that is critical to the survival of six of America's rarest animals: the Indiana bat, Florida manatee, California condor, whooping crane, American crocodile, and the snail darter, a small freshwater fish from Tennessee.

### **Vole Rediscovered**

A subspecies of the vole *Microtus californicus*, known as the Amargosa meadow vole, has been rediscovered in a desert area near Barstow, California, after having been thought extinct since 1917.

### **Whooping Crane Chicks Up**

The largest number of wild whooping crane chicks in recent years was hatched in the summer of 1975. Fourteen chicks were still surviving at the start of the fall migration, eight on their breeding grounds in Wood Buffalo National Park in Canada, and six at Grays Lake national wildlife refuge in Idaho, where they had been translocated for rearing by sandhill cranes.

### **Oil Waits for the Condor**

An oil company has been barred by a US

District Court from drilling for oil near a nesting site in the California condor nesting sanctuary at Sespe, near Los Angeles. Only about 50 birds remain, and had the drilling been allowed, the whole sanctuary might have been at risk.

### **Eagles Up, Ospreys Down**

The annual US Forest Service survey of bald eagles and ospreys in national forests in the Great Lakes area indicates that the eagle increased but the osprey produced slightly fewer young in 1975. Young eagles fledged, at 192, were 30 more than in any previous year (the survey began in 1964), but at 102 there were 16 fewer young ospreys than last year.

### **Ospreys and Pesticides**

An experiment in which eggs were exchanged between ospreys nesting in Connecticut and Maryland suggests that environmental pollutants, notably dieldrin, DDE and PCB, are the most likely cause of the marked failure of Connecticut osprey eggs to hatch and the consequent severe decline of the osprey population in the state.

### **Duck Hawk Returns**

Three young peregrines or duck hawks, the first in many years, were successfully fledged in New Jersey in 1975. They are the first peregrines known to have been reared in the United States east of the Mississippi for the last fifteen years.

### **Hawks and Owls Saved at Airport**

Some 70 snowy owls and red-tailed hawks, potential menaces to the aircraft using Toronto International Airport, are being caught there every year and transported to places where they can be safely released. At first airport personnel were ordered to shoot the birds, but a birdloving airline pilot persuaded the authorities to adopt the present scheme. On at least one occasion a snowy owl was sucked into the jet of a passenger plane, severely damaging the engine.

### **Falconry Standards Laid Down**

Falconry is forbidden in some states. Where it is allowed, falconers must have a basic knowledge of raptor identification, and fulfil various other requirements



connected with the welfare of their birds. The new federal regulations arise out of the USA's treaty with Mexico, which extends federal protection to virtually all birds used in falconry.

#### **Kirtland's Warbler Up**

There was a small increase, from 167 to 179, in the number of singing male Kirtland's warblers counted in the annual census in Michigan in 1975. It is hoped that the intensive efforts to kill the cowbirds that are parasitising their nests are beginning to take effect.

#### **Bird Data Bank**

A computerised collection of information on more than 70 species of colonially nesting birds is being established at the Cornell University Laboratory of Ornithology. Information from Colonial Birds Register, CLO, 159 Sapsucker Woods Rd, Ithaca, NY 14853.

#### **Endangered Salamander**

The Fish and Wildlife Service proposes to list the Red Hills salamander as an endangered species. It is confined to forested ravines in an area of 60,000 acres in south central Alabama.

### **LATIN AMERICA & CARIBBEAN**

#### **Darien Gap Highway Halted**

At the instance of four US environmental bodies, a US District Court judge has issued an injunction against further construction of the Darien Gap Highway in Panama until the US Department of Transportation provides an environmental impact statement as required by law. The four bodies claim, among other things, that the highway will cause the immediate disruption of the traditional ways of life of the Cuna and Choco Indians, and ultimately their dispersal and extinction, as well as have detrimental impacts on the flora and fauna of this hitherto undisturbed area.

#### **The Cahow Recovers**

Thanks largely to the tireless efforts of David Wingate, Bermuda's chief conservation officer, the number of fledglings of the gravely endangered cahow *Pterodroma cahow* is at last slowly increasing. During

the five years 1971–75 a total of 65 was reared. The main recent threat has been competition for nest sites by the white-tailed tropicbird, and Wingate has defeated this by fixing baffles to all the cahow nesting burrows that he could find, so as to admit the cahows but keep out the tropicbirds.

#### **Puerto Rico Parrots Up**

The 1974 census of Puerto Rico parrots *Amazona vittata* resulted in all-time low population count, only 13 birds. However, six young birds successfully fledged in 1975, as a result of the protection of nest cavities from both the weather and brown thrashers. The possible effects of Hurricane Eloise on this tiny population is not yet known.

#### **Orinoco Crocodile in Danger**

Professor Federico Medem, who is surveying crocodiles in Colombia for WWF, reports that there are now no more than 200–300 adult Orinoco crocodiles *Crocodylus intermedius* in the whole of the Colombian Orinoco plains, which indicates that the species is really endangered. He hopes to be able to breed some in captivity.

#### **Guyana Bans Wildlife Exports**

Guyana, which has no Wildlife Act, but only an outdated Wild Life Protection Ordinance, has temporarily suspended all wildlife exports, including aquarium fish, pending a full examination of the position by the Government. The action was triggered off by the discovery of two dead monkeys smuggled out of Guyana in a secret compartment of a cage containing birds.

#### **Rabbits in Argentina**

Between 1945 and 1950 the European rabbit crossed the Andes from Chile into western Argentina in northern Neuquen province. By 1969 it occupied an area about 257 km long and 121 km across in this and Mendoza provinces, and three years later it had extended its range north and south by 48 km and east by 64 km. Argentina has no adequately organised control programme, so it seems likely that the rabbit will eventually

become established throughout the country in suitable habitats.

## AFRICA

### Lake Nakuru Saved Again

A plan to build a pesticide factory in Nakuru town, which would have poured copper oxychloride toxic waste into the lake and destroyed the algae on which the flamingos feed, has been stopped by the Kenya Government after protests by conservationists. West Germany had also threatened to withdraw financial aid from a new sewage works in Nakuru, because the toxic waste would also have destroyed the sewage process.

### Elephant Ban Continues

Kenya's ban on elephant hunting, imposed two years ago, will continue until the animal's survival is no longer threatened, the Kenya Minister of Tourism and Wildlife told an American hunters' symposium in Nairobi in January.

### Poaching in East Africa

The Frankfurt Zoological Society continues to grant-aid the training and equipping of anti-poaching units in East Africa, most recently with 80,000 DM for Kenya and 60,000 DM for Tanzania.

### Firewood Crisis in Ethiopia

Ethiopia is one of many undeveloped countries where, according to Erik Eckholm in the October 1975 *Natural History*, 90 per cent of the people depend on wood for their chief fuel. Recent reports suggest that the acacia woodland in Ethiopia's Rift Valley is fast disappearing. The acacias on the Government farms near Adamitulu are now being felled, and other areas on the edge of the Rift Valley Lakes National Park have been cleared.

### Cameroun Rain Forest

The Cameroun Government has welcomed the idea of totally protecting two areas of mature lowland rain forest, Korup and Douala-Edea, two proposed national parks comprising some 300,000 ha that provide habitat for at least 17 species of primate. It has demonstrated its goodwill in a most practical way by expelling illegal loggers from the Douala-Edea Reserve.

### Imperial Eagle Extinct in Morocco

Ornithologists have now finally accepted that the Spanish race of the imperial eagle *Aquila heliaca adalberti* is extinct in Morocco. This emphasises the responsibility of the Spanish Government for the continued existence of the isolated population of this eagle in southern Spain.

## ASIA

### Preserve the Sacred Groves

Scattered throughout India are a large number of forest tracts which have remained immune from human interference because of religious beliefs. Two of the largest are a grove of the goddess Janni at Mangaon in Poona district, and a grove of the goddess Kalkai in Kolaba district, both in Maharashtra. Madhav Gadgil and V. D. Vartak, in the August 1975 *Journal of the Bombay Natural History Society*, urge that these groves should be surveyed, and their nature conservation value assessed, so that they may continue to be preserved, even if religious beliefs weaken.

### Is the Shou Extinct?

Staff of the Bhutanese Forest Department have made extensive searches in the last-known areas of its distribution, and fear that the shou *Cervus elaphus wallichi*, a race of the European red deer and American elk, is almost certainly extinct in Bhutan. It could, however, still exist in neighbouring areas of Tibet.

### Rhino Poachers Caught

Two would-be poachers of the great Indian rhino were recently caught red-handed, as they were digging a pit, in the Kaziranga National Park in Assam. Radios supplied by WWF were used to facilitate their arrest.

### Buffaloes in Nepal

Only 40 wild Asiatic buffaloes are estimated to survive in Nepal, all in the Koshi Tappu wildlife reserve in the eastern Terai.

### Sikkim Gets Going

The former Himalayan kingdom of Sikkim, now India's newest state, has decided to set up both national parks and wildlife sanctuaries.



### USSR Trade in Rare Species

The Novosti Information Service announces that more than 50 snow leopards, an RDB species, have been caught in Kirghizia over the past five years, and delivered to zoos throughout the world.

### ANTIPODES & OCEANS

#### Wilderness Areas for Australia

The Australian Conservation Foundation has urged the governments of Australia to create a national wilderness conservation system. At present all the states except Western and South Australia have legislated for wilderness areas. These are defined as being large enough to be ecologically viable, maintain a high degree of genetic diversity, and be suitable for the enjoyment of solitude and unconfined types of recreation.

#### Threat to the Palau

The natural environment of the Palau Islands would be seriously affected if a proposed supertanker facility and oil refinery were built there to enable Japan to buy and store Iranian oil. Conservation bodies are concerned that an adequate ecological study and environmental impact statement should be available before any decision is made.

#### Threat to Black Petrel

The black petrel *Procellaria parkinsoni* is now known to breed only on two islands off New Zealand, Great Barrier and Little Barrier, off the east coast of the upper North Island. Former mainland colonies appear now to be all extinct. The total world population is now probably considerably less than 2000, of which some 200–300 pairs breed on Little Barrier, where their situation is now critical owing to the depredations of Polynesian rats and feral cats, both introduced by man. A campaign to eradicate the cats has been held up for lack of funds.

#### Rare Snake Still Exists

The party of Edinburgh University students who spent five weeks on Round Island, north of Mauritius, in July/August 1975, confirmed the continued existence there of one of the two rare endemic

snakes, *Bolyeria multicarinata*. They also reported that the ten goats which still inhabit the island are a major cause of the continuing destruction of the vegetation, but the latest information is that these have all been shot.

### Corrigenda

In ORYX Vol. XIII, p. 142, a cross heading was omitted, so that the last four lines of the first paragraph, which refer to Papua New Guinea, were erroneously made to refer to Fiji. The correct name of the Fijian fruit bat (page 141) is *Pteropus tonganus*.

### NEW NATIONAL PARKS

Glenveagh, Donegal, the second Irish national park, covers 10,000 ha of mountainous country, with bogs, heaths, lakes and coastal woodland.

The Italian Ministry of Agriculture is establishing an agricultural tourist park in the Province of Rieti, in a 10,000 ha mountain area between Lakes Salto and Turano. In Tuscany the Maremma Nature Park has recently been opened.

Norway has created the Anarjokka National Park, with an area of some 1390 sq km, bordering the Lemmenjoki National Park in Finland. It is hoped that this will lead the way to a new northern Scandinavian international park, to help preserve some of the most endangered species in northern Europe, such as bear and wolf.

Timanfaya national park has been set up on Lanzarote in the Canary Islands (Spain), and the mountainous area of Montserrat, near Barcelona, has been declared a 'picturesque area'.

In October a bill giving congressional approval to the Tortuguero National Park on the Atlantic coast of Costa Rica was passed. This will help to protect the turtle breeding beaches against exploitation, squatting, farming and ranching.

The Legislative Assembly of the Caribbean island of Dominica has established the Trois Pitons National Park.

A national park of approximately 600 sq m has been established in the Kulu valley, Himachal Pradesh, which is one of the principal habitats for the musk deer *Moschus moschiferus* in India.

Uttar Pradesh will declare the North Kheri Forest Area a national park in July 1976, when selective tree felling has finished. The Dudhwa sanctuary will be its core area.

Pakistan has officially established the 2200-sq-km Khunjerab national park in northern Hunza, next to the Chinese border. This high mountain park is designed to protect such rare mammals as the snow leopard, Marco Polo sheep and ibex.

New South Wales is to create a new national park on Lord Howe Island, 630 km east of the Australian mainland.

The Cook Islands Government has presented Manaue Island 'to world science' as the first World Marine Park. The island consists of two islets and a lagoon, totalling 8.5 sq m (2195 ha).

#### NEW NATURE RESERVES

Some 2600 acres of marshland at Elmley on the Isle of Sheppey, four miles east of the Medway estuary in Kent, is the latest reserve of the Royal Society for the Protection of Birds.

Ogof Ffynnon Ddu, in the Swansea valley, Glamorgan, has become the first underground national nature reserve. It is the longest and deepest cave system of its type in Britain.

Three new national nature reserves in Scotland are: Ben Lawers, Perthshire, the most famous site in the Highlands for arctic-alpine plants; Cairnmore of Fleet, Galloway, with golden eagle, peregrine and raven among its breeding birds; and Keen of Hamar, in the north of Unst, the northernmost of the Shetland Islands, also famous for its limestone plants.

Rahoy Hills, 1720 acres in the Morvern area of Argyll, has been bought jointly

by Christopher Cadbury, the Scottish Wildlife Trust, the Society for the Promotion of Nature Reserves and the World Wildlife Fund. It contains important communities of arctic-alpine plants, and will be managed jointly by the SWT and the SPNR.

The Scottish Wildlife Trust has received a gift of 26 acres of cliffs and sea braes at Arbroath, Angus, to be known as Seaton Cliffs.

The S.W.T. has leased 300 acres of the native pinelands in the Glen of Ryvoan, between Abernethy Forest and Glenmore Lodge, Inverness-shire, from the Forestry Commission, for 21 years.

The RSPB has bought the site of the famous osprey eyrie at Loch Garten on Speyside for £290,000. It includes 1500 acres of pinewood, moorland, loch and marsh.

Norway has decided to establish the Nordre Øyeren nature reserve east of Oslo. With an area of 62.6 sq km it will be the largest reserve in Norway and one of the largest in Europe.

Pinckney Island, an unspoiled 4000-acre tract in coastal South Carolina, has been given to the US Fish and Wildlife Service to become a national wildlife refuge. It contains 25 alligators, brown pelicans, and many wildfowl and other water and waterside birds.

The Petit Manan national wildlife refuge, a 1700-acre coastal peninsula in southern Maine has been given to the Fish and Wildlife Service to preserve the nesting wildfowl, ospreys and other birds.

Costa Rica has declared more than 300 sq km of the Corcovado Basin on the Osa Peninsula on its Pacific coast as a national biological reserve. It is now the largest protected area of tropical wet forest in Central America.

The South African Government plans to create what it claims will be the second largest nature reserve in the world by adding new conservation zones in



Damaraland and Kaokoland to the existing Etosha Game Park and Skeleton Coast Park, thus establishing a single contiguous area of 72,000 sq km.

The Government of Swaziland has recently declared its second game reserve, Hlane. WWF has urged that this and the long-standing Mlilwane Reserve should be declared national parks.

The Indian states of Karnataka, Kerala and Tamil Nadu are to set up a wildlife sanctuary at the tri-junction of their boundaries, with a common administrative board. Tamil Nadu will develop tourism so as to make the sanctuary self-supporting.

The remaining 202 ha of Maud Island in Pelorus Sound, New Zealand, is to be acquired so that the whole island can be reserved for the preservation of flora and fauna. It is one of the two known habitats of Hamilton's frog.

#### PERSONALIA

Melinda Appleby has been appointed Secretary of the Council for Nature. She succeeds Colin Macintosh, who

resigned in November to work for the Scottish Education Department.

Sir Robert Falla has retired as chairman of New Zealand's Nature Conservation Council, and is succeeded by Professor J. E. Morton, head of the Zoology Department of Auckland University.

Dr Arturo Gomez-Pompa, vice-chairman of the IUCN Ecology Commission, has been elected Chairman of the UNESCO Man and the Biosphere Programme.

John Parslow has been appointed Deputy Director (Conservation) to the Royal Society for the Protection of Birds. He was previously with the Institute of Terrestrial Ecology, studying the effects of chemical pollution on seabirds.

Dr David Peakall has become head of the Toxic Chemicals Division of the Canadian Wildlife Service in Ottawa.

#### OBITUARY

Luang (Sir) Samarn Vanakit, President of the Association for Conservation of Wildlife in Thailand, died on November 5, aged 79.

#### National Parks

The 1975 UN List of National Parks and Equivalent Reserves comprises 1352 areas (1120 in 1974). The ten countries with the highest number of areas protected are USA 269, Australia 239, USSR 95, Canada 70, Japan 37, South Africa 32, Chile 27, Sweden 26, Indonesia 24, Brazil 22.

The ten largest national parks (NP) or equivalent reserves are: North-east Greenland, Denmark, 70,000,000 hectares; Central Kalahari Game Reserve, Botswana, 5,280,000 ha; Ouadi Rimé-Ouadi Achim Faunal Reserve, Chad, 4,892,500 ha; Wood Buffalo NP, Canada, 4,480,700 ha; Salonga NP, Zaire, 3,656,000 ha; Gemsbok NP, Botswana, 2,480,000 ha; Polar Bear Provincial Park, Ontario, 2,380,800 ha; Kafue NP, Zambia, 2,240,000 ha; Etosha NP, SW Africa, 2,227,000 ha; and Kluane NP, Canada, 2,201,500 ha.

#### Badger Numbers in Britain

Dr Ernest Neal estimates that the winter population of badgers in England, Scotland and Wales is between 75,000 and 90,000. He emphasises that it is impossible to make any accurate estimate because of insufficient data; his estimate is based on the 8000 sets surveyed by members of the Mammal Society. He puts the number of sets in England at 18–20,000, of which 6000 would be in the six south-west counties; in Wales 4–5000, and in Scotland 3–5000, giving a total of 25–30,000 sets for which he thinks a winter average of three badgers per set would be reasonable. Numbers would be boosted in the early months of the year by cub births but adjusted again by the late autumn by adult deaths and cub mortality.