

THE INDIAN WILD ASS

A Survey—February, 1962

*Prepared for the Survival Service Commission of the International Union
for the Conservation of Nature and Natural Resources*

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I. INTRODUCTION

Information on the present population and status of the Indian Wild Ass *Equus hemionus khur* Lesson, 1827, is scanty. For this reason I was prompted to undertake this brief fact-finding survey, especially as South African Horse Sickness¹ had been reported in that part of India recently. The International Union for the Conservation of Nature and Natural Resources sponsored my expedition, and the World Wildlife Fund very kindly paid my travelling expenses from the eastern part of India to the furthest western tip of the country.

The Report deals with the Indian Wild Ass. There are altogether in Asia five subspecies of *Equus hemionus* listed by Ellerman and Morrison-Scott (1951):—

“*Equus hemionus hemionus* Pallas, 1775. Mongolian Wild Ass. Range: now apparently only found about Orok Nor, in Central Mongolia.

“*Equus hemionus onager* Boddaert, 1785. Persian Onager. Range: north-eastern parts of Persia and North-Western Afganistan; Russian Turkestan, as above.

“*Equus hemionus khur* Lesson, 1827. Indian Wild Ass or Ghor-khar. Range: The Rann of Cutch, possibly Baluchistan, and South-Eastern Persia.

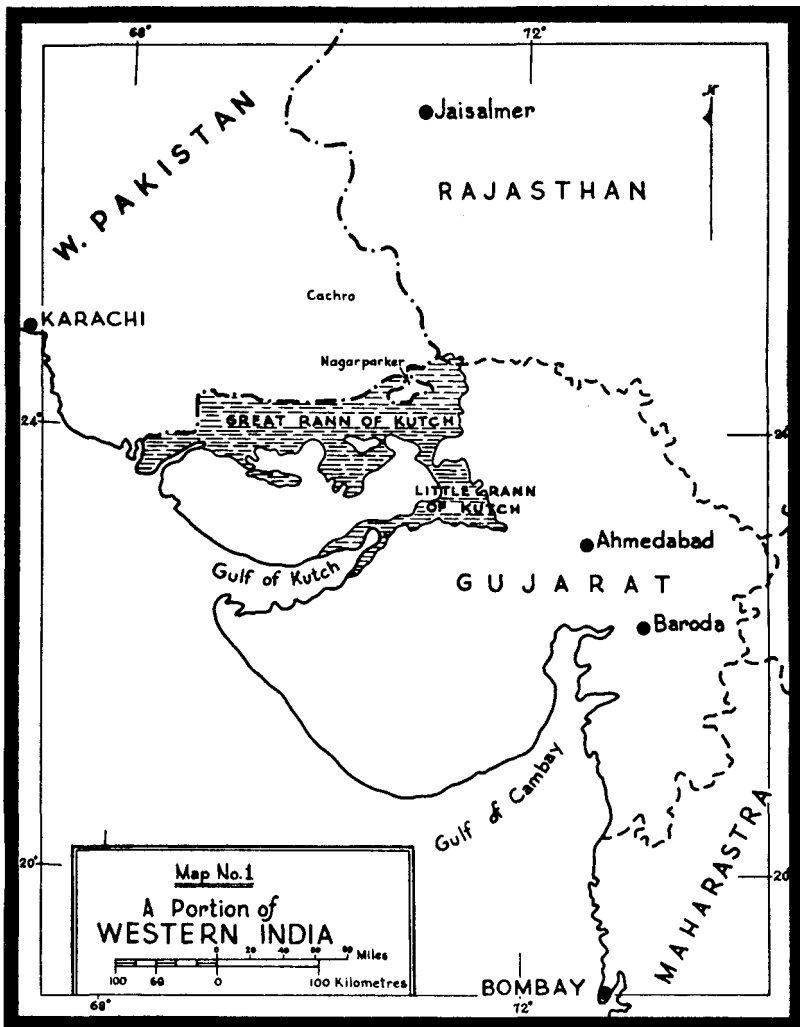
“*Equus hemionus kiang* Moorcroft, 1841. Kiang. Range: Ladak, Nepal, Sikkim, Tibet to Kukurun district.

“*Equus hemionus hemippus* I., Geoffroy, 1885. Range: Syrian Desert and adjacent parts. Possibly now extinct.”

The last mentioned is the Syrian Wild Ass which is considered by Talbot (1960) to be extinct. (Of the wild asses of Egypt Talbot (1960) states “The wild ass was once found over much of the Eastern Desert, occasionally ranging further west along the Sudan border. At present the only concentrations known are in the isolated mountain groups north of the Sudan between the Nile and the Red Sea. They apparently are also partly feral, as they are considered the property of the local Bedouin”. And of the Nubian Wild Ass Talbot says “There is considerable doubt whether the animals now considered ‘wild asses’ in Sudan are truly wild or merely ‘feral’”.

The Indian Wild Ass stands 11 to 12 hands (44 to 48 inches) high at the shoulder, whereas the local domestic donkeys only average 9½ hands (37 inches). The wild ass is a bright yellowish sandy colour, with a short

¹ A virus disease, causing bleeding under the skin and œdema, occurring in wet seasons and carried by nocturnal biting insects (flies and perhaps mosquitos). One of the most ancient horse diseases of Africa. Recognized after the occupation of the Cape by the Dutch East Africa Company. An outbreak in Africa in the 1850s probably killed 70,000 horses—40 per cent of the population of the Cape of Good Hope at that time.—Ed.



mane of a dark chestnut colour and a line of the same colour extending down the back to the root of the tail. The lower parts are white. It has light fawn-coloured shoulders, saddle and sides to the rump, constituting an example of disruptive colouration. The ears are shortish, like those of a zebra.

The local domestic donkeys, on the other hand, are a dingy grey or dirty brown, with long ears. From all accounts it is evident that not only does the wild ass never interbreed with the domestic donkeys, but it keeps entirely aloof and never mixes at all with them or with any other domestic animals. Domestic donkeys breed at any time of the year; but the wild ass is said to mate in August, September and October, and to bring forth young in July, August and September, the gestation period being eleven months. The call of the wild ass is shriller than that of a domestic donkey.

II. GENERAL REVIEW AND SUMMARY OF REPORT

The Indian Wild Asses are handsome, zebra-like creatures. They live in a unique habitat, which has to be seen to be believed.

The human population round the borders of the Little Rann of Kutch are peaceful, vegetarian folk, who do not molest the wild asses beyond driving them away from their cultivations when crops are raided. Previous estimates of the numbers of the wild asses were given in "thousands". I actually saw 214 in five days, and in close consultation with the local Forest Officers I estimate them now at 870. This lower figure may be due either to earlier exaggerations of their numbers, or to the fact that diseases may have taken a toll of them, or to both.

It is evident that a number of them died of *surra*¹ in 1958 and in 1960, and that at least some had died during the recent epidemic of South African Horse Sickness in November and December, 1961.

A census is urgently required of these rare creatures and should be repeated annually or bi-annually. All possible precautions should be taken by the authorities against diseases prevalent among domestic horses and donkeys.

III. HISTORY OF THE AREA

The Little Rann, which is the home of the wild ass, and most of the Great Rann into whose eastern end a few asses may occasionally stray, used to form part of the princely state of Kutch. During this time, I understand, wild life was well preserved by the rulers.

After India gained independence in 1947 this part of the country became the new State of Saurashtra. Later Saurashtra was merged with the larger Bombay State. More recently Bombay State has become divided into Maharashtra (in the south) and Gujarat in the north. So now Kutch is a district of Gujarat State.

The only serious expedition to obtain information on the wild asses was the one made by Salim Ali in 1946. In his excellent and most valuable

¹ A blood infection allied to the African Ngana caused by *Trypanosoma evansi*, a small animal parasite which lives in the blood and is transmitted by Horse Flies (*Tabarids*).—Ed.

paper he has described how he visited the Little Rann from 24th February to 3rd March, 1946, chiefly in order to obtain specimens for R. I. Pocock who was revising the Mammalia volumes of the Fauna of British India. Salim Ali again visited the Little Rann in 1960 to select places for field studies in bird migration.

Occasionally wild asses have been captured by running down and noosing from a moving vehicle, for zoos and to breed mules for the army. For example in February, 1953, six were captured and sent to Jullunder. And in the old days, before the advent of the motor vehicle, spearing and capturing of wild asses were evidently done by relays of horsemen. No single horse, it is said, could keep up with them: only by changing horses and wearing down the wild asses could they be speared or captured. Gravid mares were the easiest to catch up with.

I was told that a pair was captured about thirty years ago by the princely family of Dhrangadhra, and trained to draw a carriage, and that they worked very well.

IV. GEOGRAPHICAL AND ECOLOGICAL

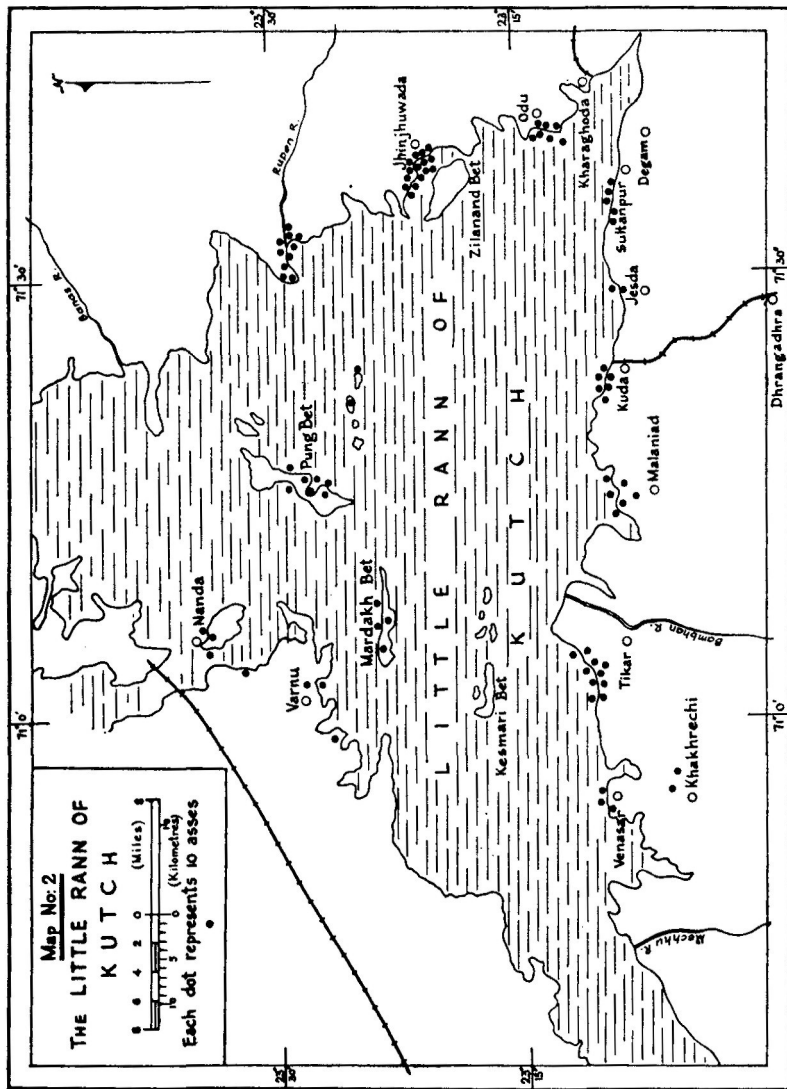
The Little Rann of Kutch, an area of about 1,000 square miles, is a salt-impregnated, flat waste, only a foot or two above sea level. It is sometimes described as an old estuary, from which the sea has receded. It is completely dried up from about November to June when motor vehicles can travel over most of the surface quite easily, avoiding the darker patches which might be soft.

During the monsoon months from July to September, the discharge from the rivers Banas, Rupen and others, together with sea water blown up from the Gulf of Kutch in the south-west by the strong monsoon winds, cover the area with 1 or 2 feet of water and render it impassable. As this flat area is salt-impregnated, no vegetation of any kind can grow on it.

In the Little Rann there are several small islands or *bets* (see Glossary) of higher ground, on which there is some sparse tree and grass vegetation. The wild asses graze on the *bets* and on the "shores" of the mainland which borders the Rann.

The vegetation of the Rann and its environs is largely xerophytic, the average annual rainfall being only 13 inches. A common tree seen was the *babul*, *Acacia arabica*. Of grasses growing on the islands and shores of the mainland, I was informed that *thegado* (*Cynerus capillaris*) forms about three-quarters of the total. The grasses of the pasture lands of the villagers close to the Rann were said to be:—

<i>dabhado</i>	<i>Eragrostis cynosuroides</i> (30 per cent)
<i>zinavo</i>	<i>Andropogon spp.</i> (25 per cent)
<i>kynyadi</i>	<i>Andropogon laniger</i>
<i>khariga</i>	<i>Sporobolus indiens</i>
<i>lampdos</i>	<i>Aristida pysaricula</i>
<i>kadvano</i>	<i>Aeluropus villosus</i>
<i>fulisenur</i>	<i>Eragrostis ciliaris</i>
<i>dhrokad</i>	<i>Cynodon dactylon</i>



The planting of 3,000 acres per annum in the Rann area in Kutch Division (plus another 1,000 to 2,000 acres in Palanpur Division nearby) of *Prosopis juliflora* was started several years ago. These trees were introduced from Mexico into India some forty years ago for planting up saline tracts in the Punjab. They are being planted on the shores of the Rann as a wind-break, to improve land fertility and as firewood. The tree grows 20 to 25 feet in ten years, and flowers twice a year. Its dry seed pods, but not its leaves, are eaten by the wild asses, and the seeds (500 to an ounce) grow from the animals' droppings—thus aiding the forest staff in their work.

These plantations on the mainland border of the Little Rann will eventually change the terrain and ecology considerably, with an effect on the wild asses which it is hoped will not be injurious in any way. It may be beneficial to them.

Near Kuda and even more so in the vicinity of Kharaghoda, to which places two railways run, are extensive salt workings. Holes are dug at the edge of the Rann, and the white saline water extracted and run off into pans. After evaporation the salt is collected, forming quite a big industry.

V. ADMINISTRATIVE AND POLITICAL

The responsibility for the preservation of wild life in the area, particularly the wild asses, mainly rests with the State Forest Department. In Gujarat there is a State Wild Life Officer, directly under the Chief Conservator of Forests.

The Divisional Forest Officer of Kutch Division, with headquarters at Bhuj, has jurisdiction over most of the Little Rann, up to 15 miles north of Jhinjhuwada. North of that point is Palanpur Division, under the DFO of that Division. Under the DFO of Kutch is a Range Officer stationed at Dhrangadhra, and under the latter officer is a Round Officer at Jhinjhuwada, as well as other subordinate staff. Their chief duty consists of planting and protecting the *Prosopis juliflora* trees.

The population of the environs of the Little Rann of Kutch, all Gujarati speaking, are vegetarian. They do not harm the wild asses or other wild life. In fact some of them are reputed to be so "orthodox" that they are very reluctant to kill the locusts which devour their crops, but wish only to drive them away. One village, I was informed, does not allow even eggs to be eaten by others in the vicinity of their village. This belief in the sanctity of life has obvious advantages when the preservation of wild life is in question.

VI. GENERAL ACCOUNT OF THE SURVEY

On 9th February, 1962, a brief train stop at Baroda enabled me to discuss my proposed tour with Conservator of Forests, Shri S. R. Umbarje and the State Wild Life Officer, who came to meet me and brought my tour programme. This tour was to be rather short and circumscribed, I was informed, due to the fact that the DFO of Kutch and his jeep were required for the forthcoming Election. As there was no time to be lost,

I continued my journey on the same train and arrived at Surendranagar about midnight. There I was met by Shri R. K. Rathod, DFO of Kutch, who had jeeped from Bhuj across the Little Rann to meet me. He had crossed the Rann via Kesmari Bet and other small *bets*, but had seen no wild asses. Shri P. G. Joshipura, Range Officer of Dhrangadhra, was also there to meet me.

At noon on 10th February we arrived at Dhrangadhra, which is very close to the Little Rann where we were to camp for at least one night. At 3 p.m. we jeeped the few remaining miles to the village of Kuda on the shore of the Rann and looked at a freshwater pond where a forest guard had seen 59 wild asses drinking on the previous afternoon. A little further on we saw herds of 22, 11 and 3 wild asses. They were very alert, usually keeping a sharp look-out for human approach.

I tried to observe carefully whether each herd had a leader or not, and particular "look-out" animals. I noticed that two animals were slightly lame—probably due (I was told) to having stones thrown at them when they raided crops at night. As we drew near to each herd, it moved away from the undulating shore of the mainland, and made off on the flat and barren Rann.

While we followed each herd as it galloped across the Rann, we were able to catch up quite easily in the jeep by doing 40 m.p.h. and then slowing down to 32 to 34 m.p.h. which is the maximum speed of the asses. The driver was instructed to drive to the left of each herd, so that I could observe and take photographs of the animals on my right.

The asses were not panicky—in fact they seemed almost to enjoy the gallop which is their normal method of evading enemies. Every now and then they would suddenly wheel to the right, away from the jeep, or to the left just in front of the jeep; and we had ourselves to stop and turn to the required direction if we wanted to follow them again. After a mile or two their speed would drop to about 28 m.p.h.

Whenever, during the course of our investigation we came to a sizeable village, I requested the DFO and RO to make inquiries about wild asses, especially whether any had died, and whether any domestic horses or donkeys had died from diseases. The information so collected is summarized later in the Report.

On 11th February we packed our belongings and set off on a journey along the south and up the east border of the Rann to the large *bet* of Zilanand (Jalander) and the nearby village of Jhinjhawada. Near Sultanput we saw a herd of 22 wild asses, with two solitary ones wandering close by. I am not sure what is the reason for certain asses going solitary. Presumably they were oldish males, in either enforced or voluntary exile; but we noticed that they were always close to their herd and sometimes even rejoined it.

I tried to photograph one of these solitary ones by remaining hidden in a thorny thicket while the others of the party tried to drive the animal towards me. Several attempts ended in dismal failure, for the animal each time cleverly made off in another direction. Inevitably I had a feeling that I was the "ass" and that the wild animal I was trying to capture on film was an alert and astute creature! Only by returning to the jeep

and following the herd on to the Rann and photographing them at 32 to 34 m.p.h. at 1/1000 second shutter speed was I able to regain some of my self respect! I was told by a smiling informant that on a certain occasion the local police had been detailed to drive the asses away from the cultivations they were raiding. The asses galloped out in front to the Rann with the police following behind in jeeps. On the return journey, which took place immediately, the order was reversed: the police were in front and the asses behind!

At Degam village we met the *sarpanch* (president of the village council) and the *panchayat* (council members), from whom we got much information. It was particularly fortunate that I could meet these men, as I was able to learn from them what the feelings of the local people were regarding the wild asses. With the help of the DFO and RO, who did the English-Gujarati Gujarati-English interpretation, I explained to them the value of the wild asses as a rare species found only in their part of India; how the animals could be a source of pride to them, and that they could perhaps tolerate some damage to their crops, in order that a valuable species might survive.

In other parts of the country, I explained, the lions of the Gir Forest caused some destruction to cattle, and the rhino of Assam and West Bengal raided rice fields—but the local people commendably tolerated this. The reactions of the council members were very gratifying: the *sarpanch* confirmed that the villagers only drove away the wild asses from their crops at night, and never harmed the animals. They were proud to be the only custodians of a rare species of India.

We drove past the extensive salt workings near Kharaghoda, and then, further north near the southern tip of Zilanand Bet, saw 60 wild asses in herds of 10, 7 and 43. In this area the mirage effects in the shimmering heat were even more striking than previously: asses seemed to be walking in water complete with their reflections, and the *bets* seemed real islands in a real sea—though every yard of the Rann was dusty dry.

The next day, 12th February, we explored fresh terrain near Zilanand Bet on the north and east sides, and encountered wild asses in groups of 8, 7, 45 and 22. I found a carcass of a wild ass, about two or three months old, which I photographed. We glimpsed a frightened blackbuck—the only one on our tour. Earlier, on the mainland, we had seen two or three nilgai.

In Jhinjhawada village we met, among others, the Veterinary Assistant and were able to get more authoritative information about deaths from diseases of wild asses, domestic horses and donkeys during the past few years.

On the morning of 13th we met the Vet. again, and also the members of the village council. We obtained more information and as at Degam spoke about preservation of the wild asses—with very gratifying response. I feel certain that direct personal contact with these village *panchayats* is a very effective way of putting across the reasons and need for wild life preservation.

I longed for the opportunity to explore further, and to visit Pung Bet, but our time was circumscribed by the forthcoming Election for which

the DFO had to return. So in the afternoon we jeeped back to Dhrangadhra by the route along which we had come. In the evening I made a special point of contacting the Veterinary Officer of Dhrangadhra, who had 60 villages under his charge. He informed me that from 15th November to 7th December, 1961, no less than 392 domestic horses (and some donkeys) had been inoculated against South African Horse Sickness, a dose giving six months' immunity and costing Rs.1 each at Government expense. The vaccine is prepared in the brains of mice, one mouse providing 20 doses of 5 cc. each.

It was interesting to learn that it was proposed to inoculate all domestic horses and donkeys by the end of September, 1962, for this disease breaks out in epidemic form from the end of the monsoon, chiefly in November.

During my survey I was able to contact the local military, including the Commanding Officer, for firing practice is often done at Keshmari Bet near Tikar. They stated that they had never seen any wild asses in that area, nor had they shot at any.

On 14th we paid a second visit to Kuda and its environs, and set up a hide near a fresh-water drinking place in order to get a close-up view of the asses moving about freely and undisturbed. A herd could be seen about half a mile away, keeping a sharp look out in all directions. The animals were much too clever to approach the hide. Once again a very strong conviction obsessed me that I, crouching uncomfortably in the hide in the heat of the day, was the " ass " and once again my self-respect could only be restored by following the herd in the jeep. The usual thing happened: the asses galloped away to the safety of the Rann, and at 32 to 34 m.p.h. I took photographs of them at 1/1000 second shutter speed. They numbered 48 this time, but of these 36 may have been seen by us on the first day, so I added only 12 to the score!

Thus ended my brief field observations of the wild asses in their unique habitat.

VII. DISTRIBUTION, STATUS AND FUTURE OF THE INDIAN WILD ASS

Distribution.—Wild asses appear to have once had a fairly wide distribution in the dry regions of North-West India and West Pakistan. During the last century they existed as far north as Jaisalmer and Bikaner of Rajasthan (India), and Sind and Baluchistan (West Pakistan).

Talbot (1960) was mistaken when he wrote of the wild asses that " Most of them live in the Great Rann of Kutch, northward from Bombay . . . ". As far as I can ascertain, there are no wild asses actually in the Great Rann. Only a few stragglers are reported to pass along the eastern border of the Great Rann, presumably on their way to and from West Pakistan where a few animals have been reported.

I have been trying to check these reports of wild asses in West Pakistan, and have been in correspondence with Dr. A. R. Ranjha, Director of the Zoological Survey Department of Pakistan. From him has come information that a local *shikari* (sportsman) shot one in 1959, and that the *shikari* has stated that wild asses are found in the Nagarparkar and Chacro

tehsils of Tharparkar District, which adjoins the (Great) Rann of Kutch on the Pakistan side, and are hunted by *shikaris*. The shikari also reports that between the Indian and Pakistani outposts the wild asses come over to the Pakistan side for grazing ; that they move back to the open spaces of the Rann of Kutch in the morning, and live and breed on the Indian side of the border because they feel safe and free from molestation there ; that no data regarding their population is available.

From Baluchistan the information is that the wild ass is no longer found at Tallab on the border of Kharan District, that it was “ originally met with in Balgatar (Makran) but is no longer found in the contiguous areas of Buleda and Zamran . . . it was formerly met with between Panjgur and Sohtgaon areas but is now rare ”.

Status.—In 1946 Salim Ali estimated the population of the Indian Wild Ass in the Little Rann of Kutch as 3,000 to 5,000. Later in 1960 (*in litteris*) he considered that the estimate given by the Range (Round ?) Officer of Jhinjhuwada of 2,000 animals as “ probably not unreasonable ”. Wynter-Blyth (1956) described the wild ass as “ more than abundant ” and “ in his thousands ” and “ undoubtedly very common ”. When I mentioned these figures to the DFO and RO who accompanied me on my expedition, they both expressed surprise and gave much lower estimates.

After our tour along the southern and eastern borders of the Little Rann, where the District Forest Officer, the Round Officer, and I saw a total of 214 wild asses (Kuda 36, Sultanpur 24, South Zilanand 60, East and North Zilanand 82 and Kuda 12), the three of us sat down and made an estimate. They did the actual estimating, locality by locality. I was a “ sobering influence ” on them, requesting them to be careful and conservative. Their estimate, which I accept is as follows :—

Khakhrechi . . .	20	
Venesar . . .	30	
Tikar . . .	100	
Malaniad . . .	60	
Kuda . . .	60	
Jesda . . .	20	
Sultanpur . . .	50	
Odu . . .	70	
Jhinjhuwada and	} 150	
Zilanand Bet . . .		
Rupen River . . .	100	
Pung Bet and . . .	} 200	
Kutch Mainland . . .		
Total . . .		860

To this I have tentatively added 10 for the border of the east of the Great Rann and West Pakistan, making a grand total of 870.

Grand Total . . . 870

In the Little Rann of Kutch the wild asses appear to be secure from danger as far as molestation and killing by man are concerned. Wolves are the only potential predator enemy, and these appear to have become very rare indeed.

Wild asses show a strong partiality to crops, raiding (in order of preference) *gram*, wheat, cotton, millet and *jowar*. They get driven away from the fields when they enter them at night, and an occasional ass might become temporarily lame from stone throwing.

Although they have to compete with vast numbers of domestic cattle, sheep and goats for the little grass that there is, the asses are probably accustomed to such conditions and looked rotund and healthy in condition.

Diseases.—The chief danger, as I see it, to the wild asses is undoubtedly their susceptibility to diseases contracted from domestic stock. Salim Ali (1946) stated “ No epidemics appear to be known among the wild asses ” ; but in August, 1960, he informed me (*in litteris*) “ One disturbing bit of information the Ranger gave me is that quite recently 25 to 50 (to his knowledge) asses had died of a mysterious illness. The animals ‘ turned round and round and fell dead ’ ”.

While in Jhinjhawada we checked and confirmed this occurrence of 1960. In fact one forest guard stated categorically that in April to May, 1960, he saw 30 dead carcasses of wild asses, and heard of about 120 more ; but no report had been made to higher authority. From the symptoms described, the Veterinary Assistant at Jhinjhawada said this disease was almost certainly *surra*, and this was later confirmed by the Veterinary Officer of Dhrangadhra. The latter officer also stated that in 1958 at Jhinjhawada six domestic horses died of *surra* and *surra* had been confirmed in two dead wild asses which had been brought in to him for post mortem examination. There are no large scale inoculation arrangements for combating *surra* : apparently each dose costs Rs.3·50 and the owner has to bear the expense.

Now for South African Horse Sickness. This disease apparently swept through the area under review in November and December, 1961. Personal inquiries at some of the villages we visited revealed the following deaths :—

Village.	Horses.	Donkeys.	Wild Asses.
Kuda	—	—	2
Nirali	10-11	0	3
Degam	12	0	5-6
Odu	15	—	—
Jhinjhawada	10-15	0	1

The Veterinary Officer at Dhrangadhra stated that as far as he knew wild asses rarely get anthrax and they are not susceptible to foot and mouth disease, hæmorrhagic septicæmia or rinderpest. Also that he had records of 78 horses and 6 donkeys dying of South African Horse Sickness in November and December, 1961, but no knowledge of wild asses dying of this disease as these wild animals did not come within his purview. Now it appears that at least some wild asses died at the time that South African Horse Sickness was prevalent and that no note was taken of this by the authorities.

Future.—A careful system of reporting outbreaks of diseases among domestic horses and donkeys, and deaths of wild asses at the same time, needs to be instituted. Prophylactic measures against such outbreaks require the urgent attention of the authorities. It is gratifying to learn that steps are intended to be taken to immunize horses and donkeys against South African Horse Sickness.

A census of the wild asses should be conducted every year, or at least every two years. As the country is all open and the animals easily seen, this should not be difficult. The possibility of undertaking an aerial census should not be overlooked, and the co-operation of the Indian Air Force or of private flying clubs should be sought.

Wild asses, if captured young, seem to do well in captivity. Harper (1945) records that the breeding of captive wild asses from India was successfully carried out in Paris from 1842–1849; and that out of nine foals produced during this period, six survived in 1849. I saw a mare ass in the Junagadh Zoo, and suggested that a female be procured and attempts be made to get them to breed there. In the Ahmedabad Zoo I saw a pair together in one enclosure, and an odd one by itself in another. The latter could well do with a mate.

It would be a reasonable conservation measure, in my opinion, to capture departmentally a few pairs of young wild asses and keep them in good zoos with a view to studying their life history and breeding them—in case anything serious should happen to the ones in the wild state.

VIII. RECOMMENDATIONS

I make the following recommendations :—

1. That the Indian Wild Ass be officially placed on the list of fully protected animals by the Gujarat State Government, and that it be constituted State property wherever found.

2. That permits for capture of young ones be issued only for special reasons, for good zoos, and only by the Chief Conservator of Forests, Gujarat.

3. That a physical count (census) be done as soon as possible, and repeated annually, or at least at regular intervals of two years or three years.

4. That the Veterinary Department be moved to inoculate all domestic horses and donkeys in the area against South African Horse Sickness each year by the end of September, and also against *surra* if possible.

5. That all outbreaks of diseases or other occurrences among the wild asses be observed and reported by the authorities concerned.

6. That a few pairs of young ones be humanely captured and kept in good zoos, for study and for breeding.

7. That a complete ecological study of the Indian Wild Ass and its environment be conducted by competent persons in the near future.

IX. ACKNOWLEDGMENTS

I owe my sincere thanks to Shri Hari Singh, Chief Conservator of Forests, Gujarat State, for welcoming my offer to come and investigate the Indian Wild Ass and for extending his Department's full co-operation to me. Particularly I am grateful to the DFO of Kutch, Shri R. K. Rathod and his RO, Shri P. G. Joshipura, for making all the detailed arrangements of the expedition, for accompanying me and for further demonstrating that Gujarati hospitality has to be experienced to be believed.

I am grateful to the villagers who replied patiently to all our cross-questioning, and especially to the presidents and members of the village councils of Degam and Jhinjhuwada for their interest and for their offers of continued help in preserving the wild asses. (I suggest that copies of this Report be sent to all village councils of the area in which the wild asses occur.)

I thank the Veterinary Assistant of Jhinjhuwada, and the Veterinary Officer of Dhrangadhra, Dr. V. K. Poundarik, for all the information they gave me.

I also thank Dr. A. R. Ranjha, Director of the Zoological Survey Department of Pakistan, for so promptly and fully replying to my queries about the existence of the wild ass in that country.

Finally I must again express my indebtedness to the IUCN who sponsored my investigation, and to the World Wildlife Fund for paying my travelling expenses to and from the Little Rann of Kutch.

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XI. GLOSSARY OF LOCAL TERMS

- babul*: *Acacia arabica*, a thorny tree which prefers dry regions.
- bet*: hillock in dry season, island in wet season, in Rann. (Pronounced as "bait".)
- DFO*: Divisional Forest Officer.
- gadheda*: domestic donkey.
- ghor-khar*: wild ass.
- gram*: lentils.
- jowar*: a kind of grain.
- jungli gadheda*: wild ass.
- khachar*: wild ass (lit. mule).
- khargadha*: wild ass.
- khur*: sanscrit for "ass".
- m.p.h.: miles per hour.
- maldhari*: professional grazier of the region.
- panchayat*: village council.
- RO*: Range Officer.
- Range Officer: Ranger, or Forest Officer in charge of a Range under the DFO
- rann*: desert, sandy or muddy area, or salty waste. (Pronounced as "run").
- Round Officer: Forest Officer in charge of a Round, under a Range Officer.
- sarpanch*: president of village council.
- shikari*: sportsman (sometimes a professional tracker).
- tank: artificial pond for drinking water.
- tehsil*: a sub-division of a District.