Rivers dams and barrages of pakistan pdf

Map of the main rivers, lakes, dams, shacks and reservoirs in Pakistan This is a list of avalanches and headworks in Pakistan. This list is incomplete; you can help by adding missing items with reliable sources. Khyber Pakhtunkhwa Munda Headworks Punjab 1 Chashma Barrage 2 Head Balloki 3 Islam Barrage 4 Jinnah Barrage 5 Khanki Headworks 6 Marala Headworks 7 Panjnad Headworks 8 Qadirabad Headworks 9 Rasul Barrage 10 Sidhnai Headworks 11 Suleman Headkiworks 12 Mail Taunsa Barrage 14 Trimmu Barrage 15 Mohammad wala Headwork 16 Ghazi brother Barrage Sindh Guddu Barrage Kotri Barrage[1] Sukkur Barrage Sindh Barrage[2][3] See also List of dams and reservoirs in Pakistan References ^ Great Barrages of Pakistan (PDF). Retrieved January 13, 2017. ^ Center announces Rs125bn Sindh barrage project. Retrieved August 24, 2019. ^ PM okays Indus river barrage to admitted water woes. Retrieved August 8, 2019. External Links Recovered from Pakistan Reconstruction of Affected Farmer Communities: Inspiring Human Histories Pakistan Emergency Situation Analysis - A Profile of Mirpurkhas District, October 2014 Pakistan Emergency Situation Analysis of Pakistan - A Profile of the Matiari District, September 2014 Pakistan Emergency Situation Analysis - Sukkur District, September 2014 Context 1... the size of the fragment has steadily decreased as rivers in the Indus Basin have gradually subdivided (Fig. 2). The partition of British India in 1947 saw the creation of a new international border that bisected the Indus River system. The Indus Water Treaty was agreed in 1960 and the fl ows of the Indus, Jhelum and Chenab rivers, equivalent to 75% of the total, were allocated to Pakistan, and water from the Ravi, Beas and Sutlej rivers was assumed in India. This has had two consequences sign fi cant for the Dolphins of Indus: 1) India has the rights to the Ravi and Sutlej, Therefore, all the water from these rivers is used within India, and now they are usually dry by the time they enter Pakistan, and 2) most of Pakistan's water resources are in the west of the country, but the largest human population and major irrigation agricultural areas are in the east. This situation was addressed by the construction of massive link channels to transfer water from western rivers to those in the east so that agricultural land south of the Ravine and Sutlej could continue irrigating (Fig. 1). Before the link channels were built, some fl ow remained in each river for its entire length so that lands adjacent to the downstream avalanche could be watered more. The opening of the link channels allowed the complete diversion of the fl ow from a river into the shacks upstream, as the river could be replenred down by a link channel. Since the 1970s, for several months of the year Ravi and Sutlej have been almost completely dry and no water is released Khanki, Qadirabad, Trimmu and Panjnad face the Chenab, Balloki and Sidhnai River in ravine and Suleimanki and Islam in sutlej (Federal Flood Commission, 2010) (Fig. 1). Water diversion has been increasing progressively and the arable area expands as new channels are built, existing channels are ex-tended, their capacity increased and shacks are reemerved. Meanwhile, river discharge has been steadily declining (IUCN, 2011). The historic Dolphin Range of the Indus has been fragmented by the shacks into 17 river sections. Dolphin sightings and interview surveys showed that dolphins have been removed from ten river sections, persist in six sections and are of unknown state in the Sutlej River section on the Indian-Pakistan border (Braulik et al., 2014a). Indus dolphins now occur in fine subpopulations in the Mainstem of the Indus, bounded by Jinnah, Chashma, Taunsa, Panjnad, Guddu, Sukkur and Kotri Barrages (Fig. 1). A sixth subpopulation occurs on the Beas River in India (Behera et al., 2008). River dolphins have been removed from the Indus mainstem upstream from Jinnah Barrage and downstream from Kotri barrage and from the Indus tributaries in Pakistan (Braulik et al., 2014a). The linear extent of the occurrence is now approximately 1000 km (Braulik, 2006) and approximately 99% of the dolphin population occurs in only 690 km of river, which corresponds to a reduction of almost 80% in the effective linear range since the 1870s (Reeves et al., 1991). Three comprehensive surveys have been conducted to estimate the abundance of indus dolphins along their current range. These were carried out at end-of-year intervals, in 2001, 2006 and 2011 (Table 1). The three surveys consisted of direct counts of three observers of a viewing platform on an oar-powered wooden boat that traveled downstream along a thalweg transect, a methodology initially described by Smith and Reeves (2000). In 2006 and 2011 direct counts of tandem-travelling ships were carried out, separated by 1 km, and brand recapture was used to correct for groups that were lost, resulting in higher point estimates of abundance along with precision measurements (Braulik et al., 2012a; Noureen, 2013). Estimates of metapopulation abundance in all three surveys were similar, ranging from 1200 to 1750 individuals for the entire subspecies (Table 1). The largest and most important subpopulation lies between Guddu and Sukkur north of Sindh. This short section of 190 km of the river supports approximately 70% of all indus dolphins, at meeting rates close to 10 individuals/km. Rate of dolphin encounter and decreased abundance of subpopulation in each section of the river as one proceeds ... Context 2... the size of the fragment has steadily decreased as rivers in the progressively subdivided (Fig. 2). The partition of British India in 1947 saw the creation of a new international border that bisected the Indus River system. The Indus, Jhelum and Chenab, which is equivalent to 75% of the total, were allocated to Pakistan, and water from the Ravi, Beas and Sutlej rivers was assumed in India. This has had two consequences sign fi cant for the Dolphins of Indus: 1) India has the rights to the Ravi and Sutlej, Therefore, all the water from these rivers is used within India, and now they are usually dry by the time they enter Pakistan, and 2) most of Pakistan's water resources are in the west of the country, but the largest human population and major irrigation agricultural areas are in the east. 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River dolphins have been removed from the Indus mainstem upstream from Jinnah Barrage and downstream from Kotri barrage and from the Indus tributaries in Pakistan (Braulik et al., 2014a). The linear extent of the occurrence is now approximately 1000 km (Braulik, 2006) and approximately 99% of the dolphin population occurs in only 690 km of river, which corresponds to a reduction of almost 80% in the effective linear range since the 1870s (Reeves et al., 1991). Three comprehensive surveys have been carried out to estimate the abundance of indus dolphins throughout their current range. These were carried out at end-of-year intervals, in 2001, 2006 and 2011 (Table 1). The three surveys consisted of It has three observers of a viewing platform on an oar-powered wooden boat that travels downstream along a thalweg transect, a methodology initially described by Smith and Reeves (2000). 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The only major cities along the Indus are Dera Ismail Khan, due to an 80% reduction in the distribution range and a Sukkur and Hyderabad. The river is rarely used for commercial traf fi c, fragmented population (Braulik (Braulik) al., 2014c). Indus dolphins, also probably because the passage is repeatedly blocked by shacks, and so-called 'blind dolphins' due to their reduced eyes and poor vision, few ships present are paddle ferries or motorized and small are high priority conservation mammals due to their evolution - fi shing ships. distinctiveness and threatened status (Isaac et al., 2007). Although at present, the plains of the Indus are composed of desert, semideser desert, blind dolphins are potentially charismatic upper predators, which could scrub and irrigate agricultural land. However, several centuries ago they function as 'fl agships' for aquatic conservation, little is known about the native vegetation and the fauna of the area was mainly forestry and its basic biology. The factors that fl uence their survival and have pastures inhabited by numerous large mammals including the tiger driven its decline are not well understood, and the best strategy for (Panthera tigris), leopard (Panthera pardus), Asian cheetah (Acinonyx preserving them is unclear. The indus dolphin and the narrowly re-jubatus venaticus) and Indian rhinoceros (Rhinoceros unicornis). All but the Ganges River dolphin (P. g. gangetica), also listed in red as Endan-leopard are now extinct locally. The freshwater mega fauna of the Indus gered is assigned to a monotypic family, the Platanistidae. This is the river system previously included mugger crocodiles (Crocodylus one of the oldest diverging cetacean families) that were hunted extensively and are now found in just 29 million years ago (MY) ago, 22 MY before modern marine dolphins emerged few isolated areas of Sindh (Ahmad, 1999). The harmless, fine sh-eating (Xiong et al., 2009). Recent genetic studies showed that Indus and Gan- crocodilian, the gharial (Gavialis gangeticus), was once extended, but ges dolphins diverged from each other about 0.5 MY ago and, if it is now extinct in Pakistan (Ahmad, 1999). Two otter species, which are shown to have morphological differences, the two subspecies of smooth otter (Lutra perspicillata) and the Eurasian otter (Lutra lutra), may be recognized as separate species in the future (Braulik et al., were common, but these animals were decimated by hunting in 2014b). their hairs and now persist in only a few locations (WWF- Various reviews of the conservation status of Indus dolphins were published unpublished Pakistanis). Eight species of turtles inhabit the Indus River in the 1980s and 1990s (Reeves, 1998; Reeves and Brownell, 1989; including four species of soft shell that can reach more than Reeves and Chaudhry, 1998). There has been a substantial increase in 1m in length and four smaller species of hard shell. Knowledge of freshwater turtles since then, and of this document is to provide a use to be abundant, but a new illegal trade of soft shell turtle pieces update and full summary of what is known about Indus Indus for use in traditional Chinese medicine has resulted in mass turtle phins today, including descriptions of their status and major threats kills and greatly reduces the number of wild turtles (Pakistan Wetlands face and a discussion of conservation and research activities and program / WWF-Pakistan, 2008). A commercially important end shery option. for the migratory shadow (Hilsa ilisha) existed on the Indus River before the construction of the huts that blocked their migration. The fi sh used to enter the Indus River in large numbers each year in mid-January, ascended the river to spawn during June, July and August, For a period of several decades we have compiled published and returned to the sea in November (Islam and Talbot, 1968). Before the current and historical science fiction c newspapers of sukkur's international and southern construction in 1932, Hilsa would migrate all Asian magazines, unpublished reports from the government and NGOs, and today's Taunsa Barrage mode. The Pakistani Kotri and Sukkur barges university ortheses, as well as newspaper articles and magazines contain fi sh scales, but these were inappropriately designed for use in English, French, Urdu or Sindhi that refer to indus dolphins. All in va va can be said - by Hilsa. The shery end has collapsed entirely leading to the loss of capable documents that were summed up in the preparation of this review. The nearly 9,000 jobs and an important source of protein for reviewing local people are organized as follows: 1) background information on the eco- (Moazzam, 1999). The Dolphin Indus is one of the last mega logical and social aquatic environments, 2) Historical and current wildlife species of the indus dolphin that remain in the Indus River system. and trends, 3) summary of threats to dolphins, including direct and indirect mortality burrows, and 4) details of conservation options and research priorities. The Indus River originates in Tibet, fl ows across northwestern India A detailed map of the Indus dolphin distribution was produced by John and enters Pakistan in the north due to the entire length of the Anderson in 1879. Anderson sent letters to the end-of-the-country government in the Arabian Sea (Fig. 1). It has end comes main tributaries: the British Jhe- India asking for detailed information about river dolphins. He said lum, Sutlej, Chenab, Ravi and Beas. These rivers merge to form the Panjnad River, which has fl ow almost equivalent to the Mainstem of the Indus. 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There is very little vegetation rooted either submerged or in reports all the fi rmed cones that dolphins produced further upstream during banks. The con fi guration of canals, islands and sandbars is constantly the fl ood season and that its distribution shrank when the river change, and major changes occur during the annual fl ood. The temperate air - fl ow was low. atures rise to 50°C from May to September, and drop to near freezing It's dif fi cult, nearly 150 years later, to verify the collapsed information - between December and February; river water temperatures show sim-ed for Anderson, but all other reports released from that time of agreement ilar but less extreme fl uctuations. The discharge of the river is very seasonal: with it, and in general, it seems to be reliable. The only exception ... Context 5... 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Knowledge of freshwater turtles since then, and the aim of this work is to provide a use to be abundant, but a new illegal trade in soft-shelled turtle pieces update and full summary of what is known about Indus mourning - for use in traditional Chinese medicine has resulted in mass thefts of turtles today, including descriptions of their status and major threats kills and very small numbers of wild turtles (Pakistan Wetlands face and a discussion of conservation and research activities and program / WWF-Pakistan, 2008). A commercially important end shery option. for the migratory shadow (Hilsa ilisha) existed on the Indus River before the construction of the huts that blocked their migration. The fi sh used to enter the Indus River in large numbers each year in mid-January, ascended the river to spawn during June, July and August, For a period of several decades we have compiled published and returned to the sea in November (Islam and Talbot, 1968). Before the current and historical science fiction c newspapers of sukkur's international and southern construction in 1932, Hilsa would migrate all Asian magazines, unpublished reports from the government and NGOs, and today's Taunsa Barrage mode. The Pakistani Kotri and Sukkur barges university ortheses, as well as newspaper articles and magazines contain fi sh scales, but these were inappropriately designed for use in English, French, Urdu or Sindhi that refer to indus dolphins. All in va va can be said - by Hilsa. The shery end has collapsed entirely leading to the loss of capable documents that were summed up in the preparation of this review. The nearly 9,000 jobs and an important source of protein for reviewing local people are organized as follows: 1) background information on the eco- (Moazzam, 1999). The Dolphin Indus is one of the last mega logical and social aquatic environments, 2) Historical and current wildlife species of the indus dolphin that remain in the Indus River system. and trends, 3) summary of threats to dolphins, including direct and indirect mortality burrows, and 4) details of conservation options and research priorities. The Indus River originates in Tibet, fl ows across northwestern India A detailed map of the Indus dolphin distribution was by John and entered Pakistan in the north because of the entire length of anderson in 1879. Anderson sent letters to the government of de across the country to the Arabian Sea (Fig. 1). It has end comes main tributaries: the British Jhe- India asking for detailed information about river dolphins. He said lum, Sutlej, Chenab, Ravi and Beas. These rivers merge to form the Panjnad River, which has fl ow almost equivalent to the Mainstem of the Indus. The act, responses were more complete and full of interest, and, more to the envelope, Indus comes out of the foothills of the Himalayas and enters the Plains of Kalabagh examples of the dolphin were sent to me from the Indus, Ganges and Brah- just upstream from Jinnah Barrage, and then fl ows on a soft gradient maputra. In the mid-1870s, Indus dolphins apparently never entered (average 13 cm/km), to the southwest, for 1600 km at sea. the ocean, but were found year-round in the Indus, Jhelum, The River crosses semi-deserted and irrigated agricultural land. The Ravi, Chenab and Sutlej rivers from the Himalayan foothills to the stu - it is wide, shallow and braided and naturally highly murky. It is a linear mountain range of about 3,500 km. They were informed that they were constantly in bed and are constantly eroding their bed and banks, so consequently present in Kalabagh and in April as upstream as Attock (Fig. 1). There is very little vegetation rooted either submerged or in reports all the fi rmed cones that dolphins produced further upstream during banks. The con fi guration of canals, islands and sandbars is constantly the fl ood season and that its distribution shrank when the river change, and major changes occur during the annual fl ood. The temperate air - fl ow was low. atures rise to 50°C from May to September, and drop to near freezing It's dif fi cult, nearly 150 years later, to verify the collapsed information - between December and February; river water temperatures show sim-ed for Anderson, but all other reports released from that time of agreement ilar but less extreme fl uctuations. The discharge of the river is very seasonal: with it, and in general, it seems to be reliable. The only exception ... Context 7... Nepal, which was not under the British Administration, and where the upper dolphin distribution of the Ganges River was later found 100 km upstream than shown on Anderson's map (Kasuya and Haque, 1972). The dolphins were reported by Anderson to extend their distribution in the foothills of the Mountains of the Indus and Jhelum Rivers, to the Beas and Sutlej reached only the base of the foothills, and in the Ravi and Chenab their distribution limit was further downstream on the plains, apparently bounded by the Grand Trunk Road, the main transport route at the time. These small differences in the upstream extension of the distribution may be due to the seasonal range of uctuations that is reported differently in different rivers, or to the fact that different in each river resulted in different distribution limits upstream. A regular steamship service remained in the Indus only in the early 1800s (MacLagan, 1885), 1885), There are few accounts of river trips that can be examined for dolphin sightings to verify Anderson's map. Alexander Burnes led the first British expedition to the Indus traveling from the delta to Lahore. He reported dolphins in the Indus from the delta to Sukkur and also saw several in the con fl uence of the Ravi and Chenab in July 1835 (Burns, 1835). A few years later, it was reported that dolphins were present south of Thatta (Burns, 1842) and were very numerous between Thatta and Sukkur (Hall, 1848). In the 1860s, dolphins were known to ascend the Punjab Rivers (Adams, 1867), and a specimen collected from the Sutlej present-ed at the Indian museum in the 1800s with its presence in that river at the time (Anderson, 1879). At the upstream end of its range is a report from the 1840s that ' before its junction with the Sutlej, the Beas is frequented with marsopes ' (Anon., 1846). This is the same area where dolphins were recently discovered in India (Behera et al., 2008). These few records all agree with the distribution described by Anderson. In 1874 it was reported that Indus dolphins were most abundant in the middle or lower third of their range (Jerdon, 1874), which is consistent with the relatively high density area current in the Indus north of Sindh. Before the large-scale water diversion, the Indus River had approximately four times the annual discharge of the Jhelum or Chenab, six times that of the Sutlej and thirteen times that of the Ravine (IUCN, 2011). If discharge alone can be considered a crude indicator of dolphin abundance, punjab tributaries may have supported lower dolphin densities and smaller numbers than the Indus historically, and the Jhelum and Chenab may have had more dolphin abundance than the smaller Ravi, Sutlej and Beas. In 1901 it was reported that ganges and Indus dolphins were not numerous and had been much more widespread, indicating that more than 100 years ago they were already perceived in decline (Blanford, 1901). The plains of the Indus are semi-arid, and the vast majority of rainfall falls during the summer with the result that agriculture depends on the abil-ity to divert water from rivers. Since the 1880s (just after Anderson produced his map), 19 irrigation shacks have been built in the Lower Indus within, or at the limit of, the old dolphin range (Fig. 1). The Irrigation System in the Indus Basin is said to be the largest in the world. The huts are low, the closed diversion dams composed of a series of doors (usually 60 – 70) that control the elevation of an upstream head pond maintained not to store water, but to divert it into side channels. The first six huts were commissioned at the end of the 19th century and were located in the rivers of Punjab. The completion of the Panjnad Avalanche in 1933 divided the ancient indus in two, separating the animals from the Indus River from those of the coming end comes Tributaries. By 1940, tributaries were already fragmented into seven different sections by shacks, while construction of shacks had just begun on the main indus and dolphins could move relatively unimpeded along their length until the completion of several shacks around 1960. The longest stretch of unfragmented habitat and ...