

Pinyon Jay (*Gymnorhinus cyanocephalus*)

NMPIF level: Species Conservation Concern, Level 1 (SC1)

NMPIF assessment score: 19

NM stewardship responsibility: Very High

National PIF status: Watch List

BCRs: 16, 18, 34, 35

Primary breeding habitat(s): Pinyon-Juniper Woodland

Other habitats used: Ponderosa Pine Forest

Summary of Concern

A species of the Intermountain West and southwest, Pinyon Jay is present in pinyon-juniper habitat throughout New Mexico. This species has suffered declines due to habitat conversion throughout its range over the past century and continues to show sharply negative population trends in the state and regionally.

Associated Species

Great Horned Owl, Gray Flycatcher, Plumbeous Vireo (SC2), Western Scrub-Jay (SC2), Mountain Chickadee, Juniper Titmouse (SC1), Bushtit, White-breasted Nuthatch, Mountain Bluebird (SC2), Black-throated Gray Warbler (SC2), Black-headed Grosbeak

Distribution

The range of the Pinyon Jay extends across much of the Intermountain West and southwest. The species is resident from central Oregon and eastern California east to the Dakotas and eastern New Mexico, and from southern Idaho and Montana south to central portions of New Mexico and Arizona. It generally winters throughout its breeding range but irrupts into surrounding regions when pine cone crops fail (Balda 2002). The species may be found in foothills throughout the state, wherever large blocks of pinyon-juniper woodland habitat are present. It occurs in all four BCR portions of New Mexico, though a large majority of the state population is found in BCR 16.

Ecology and Habitat Requirements

Pinyon Jays are predominantly associated with pinyon-juniper habitat, due to the species' tightly co-evolved relationship with pinyon pines. In New Mexico, Pinyon Jays are associated primarily with Colorado pinyon (*Pinus edulis*). These trees rely on the jay for dispersal of their wingless seeds, and the jay has a suite of morphological and behavioral adaptations to efficiently exploit the rich food resource that pinyon seeds provide. Pinyon seed production is sporadic, and mobile flocks require large stands of mature trees spread over a wide area (Balda 2002, Yanishevsky and Petring-Rupp 1998). Despite its close association with the pinyon pine, the Pinyon Jay is an omnivore and sometimes occurs in areas dominated by ponderosa pine, sagebrush, or chaparral vegetation (Balda 2002).

Pinyon Jay is a highly social, cooperatively breeding species that lives in large permanent flocks. Wintering flocks have been known to number up to 500 individuals. Breeding is colonial, and flocks return each year to traditional breeding areas (Balda and Bateman 1972). Most individuals spend their entire lives in their natal flock, and most young birds breed at the site where they were hatched (Balda 2002). Breeding areas are typically dense, mature stands of pinyon-juniper vegetation (Yanishevsky and Petring-Rupp 1998).

Pinyon Jays have been known to nest in nearly every month of the year, in response to abundant green pinyon cones (fall), cached seeds (late winter), or insects (spring and summer, Ligon 1978, Balda 2002). When pinyon seeds are abundant, the Pinyon Jay is one of the earliest-nesting passerines in North America. In northern Arizona, Pinyon Jays have nested as early as mid-February (Balda 2002). Nesting may also be stimulated by an abundance of insects (Ligon 1978). Birds usually raise only one successful clutch per year but will re-nest multiple times if nesting attempts fail. Ligon (1971) described an unusual pattern of late-summer/autumnal nesting in a Pinyon Jay population in central New Mexico.

Pinyon Jays are adapted morphologically and behaviorally for the harvest, transport, storage, and retrieval of pinyon pine seeds. Population viability depends on mast crops of pinyon seeds, which occur every several years (Marzluff and Balda 1992). When pinyon seeds are abundant, extensive seed caching occurs in autumn, mostly on the ground but sometimes in tree crevices. Flocks often utilize traditional caching areas from year to year. Balda (1987) estimated that a single Pinyon Jay caches about 2,600 seeds in a single autumn. Ligon (1978) estimated a flock of 250 could cache 4.5 million seeds in one autumn. Cached seeds are recovered with a high degree of accuracy and consumed through the winter and early spring (Balda 2002). Although Pinyon Jays will nest in spring in the absence of abundant pinyon seeds, spring breeding events based on insects are not typically productive enough to maintain a population. Pinyon Jays rely on occasional mast crops to produce large crops of fledglings (Ligon 1978, Marzluff and Balda 1992).

Irruptions away from normally occupied areas occur at irregular intervals and are associated with pine seed crop failures. During these episodes, birds may travel hundreds of miles in search of concentrated food resources. Large-scale irruptions over wide geographic areas are relatively infrequent, occurring for example in 1961, 1972, 1978, 1990 and 2000 (Balda 2002).

Conservation Status

Species Assessment

DISTRIBUTION	3
THREATS	4
GLOBAL POPULATION SIZE	3
LOCAL POPULATION TREND	5
IMPORTANCE OF NEW MEXICO TO BREEDING	4
COMBINED SCORE	19

Pinyon Jay is a Species Conservation Concern, Level 1 species for New Mexico, with a NMPIF combined score of 19. It receives high vulnerability scores from NMPIF for a sharply declining state population trend and for threats to breeding in the state. New Mexico populations are very important to the overall conservation of this species. Pinyon Jay is a national PIF Watch List species, with management action recommended.

Population Size

Total population for the state is unknown. PIF estimates a species population of over 4 million, and that New Mexico holds about 28%, or 1,135,000 birds. The percentage estimate shows that New Mexico has a high stewardship responsibility for this species.

Population Trend

Pinyon Jay has shown declining population trends in New Mexico, the southwest region, and nationally over the last several decades. Balda (2002) suggests major declines in numbers may have occurred 40-70 years ago, due to habitat conversion. Conventional census methods may be inadequate to determine accurate population numbers, because the species has such a large home range, is wide ranging, and occurs in flocks. BBS data for 1966-2004 are:

	Annual Trend	P-value	Number of Routes
New Mexico	-4.3	0.12	32

FWS Region 2	-4.2	0.06	51
Western BBS	-4.3	0.00	178

Threats

The main threats to Pinyon Jays breeding in New Mexico are conversion of pinyon-juniper woodland habitat to rangeland and overall decline of this habitat due to drought and bark beetle infestation. In the past, large areas of pinyon-juniper woodland have been eradicated to encourage livestock grazing on both public and private lands. Removal of woodland by chaining has dramatic effects on breeding bird populations (Sedgwick and Ryder 1987). Habitat may also be degraded by poorly planned woodland thinning and tree removal efforts. Habitat loss due to development and urban encroachment is a problem in some areas.

Unlike ponderosa pine forests, where fires may naturally occur as frequently as every 3-10 years, pinyon woodlands are not so clearly fire adapted. In one New Mexico study, natural fire frequencies in pinyon-juniper woodland ranged from 30-100 or more years (Muldavin et al. 2003). Similar long turnover times have been reported for pinyon-juniper in Mesa Verda (Floyd et al. 2000). An active, prescribed, landscape-level burn policy following a ponderosa pine model would be inappropriate for pinyon juniper woodlands (Muldavin et al. 2003) and the jays that depend on them.

Management Issues and Recommendations

Management for Pinyon Jays in New Mexico should focus on the preservation of mature stands of pinyon-juniper woodland across large areas of the state.

NMPIF Recommendations

- Avoid cutting or clearing of healthy, mature pinyon-juniper habitat.
- Maintain undisturbed woodland habitat with a mixed size and age distribution of trees.
- Where die-offs have occurred and where feasible, initiate restoration of pinyon-juniper habitat. (Note however that where pinyon trees have been eliminated, this will be a long-term endeavor.)
- Fire is not recommended as a management tool in pinyon-juniper woodland.

Species Conservation Objectives

PIF Objectives

The PIF North American Landbird Conservation Plan designates Pinyon Jay a Management species and sets an objective of doubling the present species population over the next 30 years.

NMPIF Objectives

- Stop or reverse downward trends in Pinyon Jay populations.
- Monitor Pinyon Jay populations in different regions of the state.
- Establish quantitative population objectives for Pinyon Jays in New Mexico.

Sources of Information

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