Expanding Freeflight Using Outdoor Environments: A Framework for Progressive Free-Flight Training of Parrots

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Abstract

Careful evaluation and exposure to select environments can enhance the flight competency of parrots, reducing risks of loss or injury during free-flight demonstrations or conservation reintroductions. This framework provides a system for evaluating and selecting training environments based on recoverability (visibility and access) versus skill level (reliable return), with weather and terrain features (e.g., elevation) as influencing factors. It fosters mastery of complex situations in shows or wild releases through progressive environmental levels (0–5) and flying styles (point-to-point, freestyle, at-liberty, sport, competition). Originally developed over 18 years with 22 parrots and refined over 32 years with 60 parrots (conures to macaws), with detailed records for 37 parrots across three flocks (8 macaws, 25 small-bodied parrots, 4 sun parakeets) [1], it supported 100% survival of blue-and-yellow macaws in Brazil and 72% feeder returns of Amazon parrots in Colombia [2]. The framework leverages instinctive drift [3] and socialization periods [4], aligning with the Guided Behavioral Development model in Biro et al. (2024) [2] and complementing Woodman et al. (2021) [1]. It includes an evaluation worksheet, environmental illustrations, and case studies, offering a replicable tool for conservation and training. Short training periods reflect the expertise of a professional trainer with extensive experience; new trainers typically require additional time with slower bird progression.

Bio

Chris Biro is the founder and director of Bird Recovery International, a nonprofit dedicated to improving the science of parrot reintroduction through projects in Brazil and Colombia. Globally known for training students to fly their pet parrots, he has worked with over 500 individuals across 36 countries. Since 1993, he has been flying a flock of various parrots at county and state fairgrounds, parks, and other venues across the United States as part of The Pirate's Parrot Show. During show season, he performs and flies his birds at different locations weekly. Off-season, he works with pet parrot owners, maintains a 1700 sq ft aviary for rescued and abandoned birds, and develops the flight skills of his 25-bird team. He founded the freeflight email list in 1999. His work has contributed to successful conservation reintroductions [1,2].

1. Introduction

Free-flight training enhances parrot survival by fostering wild-adapted behaviors, achieving zero predation losses over 501.2 flight months across 37 parrots with detailed records [1]. Originally developed over 18 years with 22 parrots and refined over 32 years with 60 parrots, this framework introduces a systematic approach to selecting training environments based on recoverability—visibility (ability to see the bird) and access (ability to follow it)—versus skill level (reliable return to the trainer), with weather (e.g., wind speed) and terrain (e.g., elevation) as influencing factors. It incorporates flying styles (point-to-point, freestyle, at-liberty, sport, competition) to develop natural behaviors like navigation, flocking, and predator avoidance, as evidenced by video documentation [5]. Unlike traditional aviary-based methods, which often lead to low survival rates [6,7], this approach leverages instinctive drift [3] and socialization periods [4] to align behaviors with wild conditions, supporting the Guided Behavioral Development model in Biro et al. (2024) [2]. It offers a replicable tool for conservation reintroductions, performance training, and pet ownership, addressing challenges like unexpected fly-offs or predator encounters [1]. Short training periods described reflect the expertise of a professional trainer with extensive experience; new trainers typically require additional time with slower bird progression.

Why Complex Environments?

The ability to fly in new locations is a skill needed by anyone who flies birds outdoors, whether for movie shoots, traveling shows, or hobbyist activities. Unexpected fly-offs caused by unforeseen events (e.g., crows, hawks, or amusement rides) can occur in any context [1]. If a bird is not accustomed to new locations, it may become fearful and act unpredictably [8]. The best preparation is training in carefully selected locations, progressing from easy to complex environments to match the bird's skill level. This controlled progression reduces risks compared to chance encounters with new challenges, aligning with the Four I's of Self-Interest (identification, incentive, interaction, impact) in Biro et al. (2024) [2].

Full Range of Natural Behaviors

Freeflight is the most natural form of exercise and enrichment for parrots, akin to weight training or martial arts for humans, developing skills that exceed ordinary capabilities [1]. For example, macaws trained to Level 5 can fly like wild macaws in the Andes, outmaneuvering predators and posting sentries while feeding [9]. This counters findings from the 1980s thick-billed parrot reintroduction, where captive-raised birds lacked flocking and predator avoidance skills [7]. The author's flock, including mixed-species groups, demonstrates flocking and predator response behaviors, with zero predation losses despite frequent hawk interactions [1].

Why Evaluate?

Good training sets animals up for success [10]. Evaluating environments ensures challenges match the bird's skill level, leveraging instinctive drift [3]. From the bird's perspective, there are three levels: confined (Level 0), two-dimensional (Level 1), and three-dimensional (Level 2–5)

flights. For trainers, recoverability (visibility and access) is critical, influenced by weather (e.g., wind) and terrain (e.g., elevation). The more reliable the bird's return, the less critical recoverability becomes, and vice versa [2].

Responsibly Approaching Advanced Locations

Haphazard introduction of advanced environments risks injury or loss. Sending a bird into a canyon without preparation is irresponsible [7]. Safety is achieved through careful evaluation of skills, realistic planning, and progressive training, ensuring birds are both capable and willing [2].

2. Methods

2.1 The Training Process

The framework maximizes natural tendencies, using environmental levels, flying styles, species selection, age at training start, free-weight flying, and anchor birds. It leverages instinctive drift [3], where learned behaviors evolve toward natural forms, making training accessible for pet owners with basic skills and enabling professionals to achieve wild-like competencies [2].

Ontogenetic and Phylogenetic Behavior

Ontogenetic behavior arises from an individual's life history, while phylogenetic behavior stems from evolutionary history (e.g., reflexes) [10]. Instinctive drift occurs when learned behaviors trigger innate patterns, especially when trained behaviors resemble natural ones [3]. For example, recall training conflicts with a wild bird's autonomy, but progressive exposure to natural environments aligns learned behaviors (e.g., point-to-point flying) with innate navigation and flocking [9]. This reduces maintenance training needs, as natural behaviors are more durable [3].

Instinctive Drift

Instinctive drift, where learned behaviors revert to natural forms, is often viewed as a challenge in operant conditioning [3]. However, this framework uses it positively. For example, point-to-point flying evolves into freestyle and at-liberty flying in complex environments, mimicking wild navigation [2]. Careful environmental selection enhances flight skills to wild-like levels, as seen in video evidence [5].

Common Skill Sets Required for Flying Styles

Five flying styles develop distinct skills, integrated with environmental levels:

- **Point-to-Point Flying:** Designated routes and landing sites (e.g., perch-to-perch for food) [10].

- **Freestyle Flying:** Free route selection with a fixed landing point, fostering creativity (e.g., circular flights).
- **At-Liberty Flying:** Free exploration until recalled, promoting flocking and foraging [9].
- **Sport Flying:** Combines freestyle and at-liberty in challenging environments.
- **Competition Flying:** Specific tasks testing precision.

All styles require navigation, predator avoidance, and fitness, critical for surviving fly-offs or attacks [1].

Skills for Bird and Trainer

Successful flights depend on the bird's skill level, fitness, and motivation, and the trainer's ability to evaluate locations and conditions [2]. Birds must be **able** (fit, coordinated, task-comprehending) and **willing** (motivated by security, social ties, or food) [2]. Hunger drives initial flights, but over-reliance reduces creativity (e.g., freestyle flying), requiring high-value treats or social bonds [11]. Trainers assess recall reliability (>90%) and confidence, selecting environments to match skills [1]. Short training periods reflect the expertise of a professional trainer with extensive experience; new trainers typically require additional time with slower bird progression.

2.2 Environmental Levels

Training environments are classified into five levels based on recoverability (visibility and access) and skill level (reliable return), with weather and terrain as influencing factors. Table 1 outlines the criteria and objectives, extending protocols in Woodman et al. (2021) [1].

Table 1: Environmental Levels for Free-Flight Training

Level	Recoverability: Visibility	Recoverability: Access	Skill Level: Reliable Return	Objectives	Example Environment
0	Full visibility (confined space)	Full access (no obstacles)	Basic recall in controlled settings	Develop foundational flight skills	Indoor room, small aviary
1	High visibility (>500m, unobstructed)	High access (follow within minutes)	Consistent recall in open spaces	Transition to outdoor flights	Open field, park
2	Moderate visibility (brief obscuration, <5s)	Moderate access (minor obstacles, e.g., small hills)	Reliable return with mild challenges	Introduce 3D flight, maintain handler focus	Small hill, shallow ravine
3	Reduced visibility (5–10s obscuration)	Reduced access (moderate obstacles, e.g., valleys)	Reliable return over significant terrain	Enhance navigation, ensure self-return	Small canyon, valley

			Advanced navigation, minimal trainer recovery	Develop autonomy, rely on self-recovery	Large canyon, high ridge
4	Low visibility (>10s obscuration)	Low access (major obstacles, e.g., steep ridges)	Advanced navigation, minimal trainer recovery	Develop autonomy, rely on self-recovery	Large canyon, high ridge
5	Minimal/no visibility OR poor access	Minimal/no visibility OR poor access (e.g., high cliffs)	Full autonomy, consistent self-return	Confirm reliable return without intervention	High cliff, vast wilderness

Note: Weather (e.g., wind <10mph at Level 1) and terrain (e.g., elevation changes <50m at Level 2) influence visibility and access. Environments are selected based on recall reliability (>90% successful returns) and flight confidence, assessed via trainer observation. Lower levels prioritize recoverability for safety; higher levels emphasize skill for autonomy. The more reliable the bird's return at higher levels, the less critical recoverability becomes, and vice versa [1,3].

Selecting Indoor Flight Spaces, Level 0

Fledglings make "desperation flights" indoors, requiring small spaces to limit crash speeds [4]. Mirrors, windows, and tempting perches (e.g., lamps) are avoided or covered. As skills improve, larger indoor spaces are used, and birds are exposed to outdoor environments via caging to tag stimuli as safe [1]. The natural tendency to stay near the handler (mimicking parental bonds) prevents fly-offs [9]. Training captures this tendency, cuing recall to develop point-to-point flying, which instinctive drift shapes into natural behaviors [3]. Short training periods at this stage reflect professional expertise; new trainers may require weeks to achieve similar progress.

Selecting First Outdoor Flight Space, Level 1

Level 1 introduces open spaces with high visibility (>500m) and access (unobstructed). Skills include transitioning from indoor to outdoor flight and learning air currents [1]. Predators (e.g., hawks) may chase, requiring recoverability for safety. Fledglings' tendency to stay near handlers reduces risks [4]. Training focuses on point-to-point recall and freestyle flying, building confidence [2]. New trainers may need extended periods to ensure reliable recall.

Selecting Level 2 Location

Level 2 introduces mild elevation changes (<50m) and brief sight loss (<5s), requiring object permanence to track handlers [4]. Locations include small hills or ravines, with gentle breezes. Birds show interest in vertical drops, practicing freestyle flying to maintain handler focus [2]. Progression may be slower for novice trainers.

Selecting Level 3 Location

Level 3 increases elevation changes (50–100m) and sight loss (5–10s), using small canyons or valleys. Birds work harder to navigate terrain and breezes, mastering reliable return via freestyle and at-liberty flying [2,9]. New trainers may require additional sessions to achieve reliability.

Level 4 pushes elevation changes (>100m) and sight loss (>10s), with difficult access (e.g., steep ridges). Birds rely on self-recovery, practicing sport flying in strong winds [1]. Novice trainers may face delays in reaching this level.

Selecting Level 5 Location

Level 5 involves minimal/no visibility or poor access (e.g., high cliffs), confirming full autonomy. Birds soar on updrafts, enjoying the challenge, with trainers relying on reliable return [2]. These locations offer photographic opportunities, enhancing engagement [5]. Only experienced trainers achieve these results quickly.

2.3 Evaluating the Bird

Observation assesses confidence (e.g., spontaneous flights, route choices) and recall reliability (>90%). Indicators include extended flights, terrain interaction, and flock dynamics [9]. If birds require frequent recovery, they are not ready for the next level [1]. New trainers may need more time to accurately assess readiness.

2.4 Evaluation Worksheet

A worksheet guides trainers:

- **Visibility:** Line-of-sight (e.g., >500m for Level 1, <10s obscuration for Level 3).
- **Access:** Ability to follow (e.g., unobstructed for Level 1, major obstacles for Level 4).
- **Weather:** Wind speed (e.g., <10mph for Level 1), precipitation.
- **Terrain:** Elevation changes (e.g., <50m for Level 2), obstacles.
- **Bird Readiness:** Recall reliability (>90%), flight confidence.

Trainers select environments matching skill level, progressing as reliability increases [1]. Novice trainers may require guidance to use the worksheet effectively.

3. Results

The framework was applied to 60 parrots (conures to macaws) over 32 years, with detailed records for 37 parrots across three flocks (8 macaws, 25 small-bodied parrots, 4 sun parakeets), achieving zero predation losses over 501.2 flight months [1]. Short training periods reflect the expertise of a professional trainer with extensive experience; new trainers typically require additional time with slower bird progression. Three case studies highlight outcomes:

- **Buckle (Shamrock Macaw, Fledgling):** Trained in Moab, Utah, 2008, progressed from Level 0 (full visibility/access, basic recall) to Level 5 (minimal visibility or poor access, full autonomy) in 14 days, mastering navigation and flocking via freestyle and at-liberty flying.

- **Rowdy (Calico Macaw, 2 years):** Trained over 90 days from Level 0 to 4, mastering freestyle and sport flying in low-visibility, low-access settings, achieving reliable return.
- **Fizzy (Illiger's Macaw, Adult):** Trained over 6 months to Level 3, flocking in reduced-visibility, reduced-access environments, overcoming hand-shyness.

Additional cases include:

- **African Grey (6 months):** Trained in Moab, 2008, progressed from Level 1 to 3 in 5 days, mastering freestyle flying.
- **Blue-Throated Macaw (1 year):** Trained in Moab, 2008, progressed from Level 1 to 4 in 2 days, flocking with others.

Hundreds of additional parrots across various species (e.g., African greys, blue-throated macaws) and ages were trained with similar success, achieving reliable return in diverse environments, though formal records were not maintained. These outcomes align with the Brazil reintroduction (100% survival, Level 0–3) and Colombia reintroduction (72% feeder returns, Level 0–2), where levels and styles enabled behaviors like "social flock flying" (Table 2 in [2]) [1,2].

4. What the Process Is Like

4.1 What It Is Like to Evaluate and Progress

Each level mastered increases skill and reduces loss risks. Trainers gain confidence as birds progress, with initial outdoor flights (Level 1) being the most nerve-wracking. By Level 3, birds navigate trees and cliffs reliably, reducing concerns about getting "stuck" [1]. This progression aligns with instinctive drift, shaping learned behaviors into natural ones [3]. New trainers may experience slower progression due to learning curves in evaluation.

4.2 Using At-Liberty Flying at a Show

Birds trained to Level 5 fly reliably in windy conditions or light rain, minimizing recovery needs. At-liberty flying allows birds to choose when to fly, enhancing safety and resembling natural enrichment [9]. Fly-offs self-recover within hours, reducing training time compared to traditional methods [1]. These results reflect professional expertise; novice trainers may need extended training periods.

4.3 Using At-Liberty Flying with a Fledging Bird

Fledglings learn fastest, mastering Level 5 in weeks due to natural plasticity [4]. Buckle's 14-day progression to Level 5 required minimal coaching, resembling wild learning [2]. The African grey (5 days to Level 3) and blue-throated macaw (2 days to Level 4) showed similar ease, achieved by an experienced trainer. New trainers may require weeks or months for similar results.

4.4 Using At-Liberty Flying with a Non-Fledged Adult Bird

Adult birds like Rowdy and Fizzy require longer training (months) but achieve high levels (3–4) with persistence, overcoming challenges like hand-shyness [1]. This demonstrates the framework's flexibility across ages, though novice trainers may face delays.

4.5 What It Is Like to Reach Mastery

Watching a parrot soar from a 2500 ft cliff (Level 5) evokes exhilaration and accomplishment. Birds play on updrafts, and trainers worry less about fly-offs, focusing on hazards like power lines [1]. Level 2–3 flights become routine, enhancing show reliability and pet owner confidence [2]. These outcomes are faster with professional expertise.

5. Discussion

5.1 Why Complex Environments?

Flying in new locations is critical for shows or reintroductions, as fly-offs require adaptability [1]. This framework prevents fear-induced behaviors [8], countering the thick-billed parrot reintroduction failure [7].

5.2 Why Evaluate?

Evaluation matches challenges to skill level, leveraging instinctive drift [3]. Lower levels ensure safety via high recoverability; higher levels foster autonomy [2]. Weather and terrain influence recoverability, requiring careful selection [1].

5.3 Application to Conservation

The framework supported 100% survival in Brazil (Level 0–3) and 72% feeder returns in Colombia (Level 0–2), enabling flocking and predator avoidance [2]. It offers a scalable model for psittacines, as demonstrated by successful reintroductions across diverse species in Brazil and Colombia [2], addressing ecological and conservation challenges for the family Psittacidae [6].

5.4 Application to Performance and Pet Ownership

Level 5 birds enhance show reliability and audience engagement, supporting conservation funding. For pet owners, cages become rest spots, expanding shared activities [2].

5.5 Limitations

The framework is parrot-specific and requires trainer expertise. Future research could test other species or quantify progression rates [1].

6. Conclusion

This framework enhances free-flight training, achieving high survival rates in reintroductions (100% in Brazil, 72% in Colombia) [2]. It offers a replicable tool for trainers, pet owners, and conservationists, complementing Biro et al. (2024) [2] and Woodman et al. (2021) [1]. Short training periods reflect professional expertise; new trainers require additional time.

Acknowledgments

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